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1942



1942



ST. LAWRENCE RIVER PILOT

(CANADIAN EDITION)

MONTREAL HARBOUR TO KINGSTON HARBOUR

AND INCLUDING

OTTAWA RIVER

FOURTH EDITION [1942]

ISSUED BY THE

HYDROGRAPHIC AND MAP SERVICE
SURVEYS AND ENGINEERING BRANCH

DEPARTMENT OF MINES AND RESOURCES
OTTAWA

Obtainable on payment of 50 cents from the Department of Mines and Resources

OTTAWA
EDMOND CLOUTIER
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
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The following descriptions and directions, published under the authority of the Government of Canada, form the fourth Canadian edition of the St. Lawrence River Pilot from Montreal Harbour to Kingston Harbour, and including the Ottawa River from Montreal to Ottawa.

This edition, prepared by Mr. R. W. Bent, has been compiled from Canadian information supplemented by the latest United States Government charts and publications. This work embodies all "Notices to Mariners", referring to the district, up to and including No. 42 of 1942.

Pilots, masters or others interested are earnestly requested to furnish information regarding newly discovered dangers, changes in aids to navigation, the existence of new shoals or channels, errors in publications, or other information that, it is considered, would be useful for the correction of Nautical Charts and Hydrographic Publications affecting Canadian waters to the

SURVEYOR-GENERAL AND CHIEF
HYDROGRAPHIC SERVICE,
DEPARTMENT OF MINES AND RESOURCES,
CONFEDERATION BUILDING,
OTTAWA, CANADA

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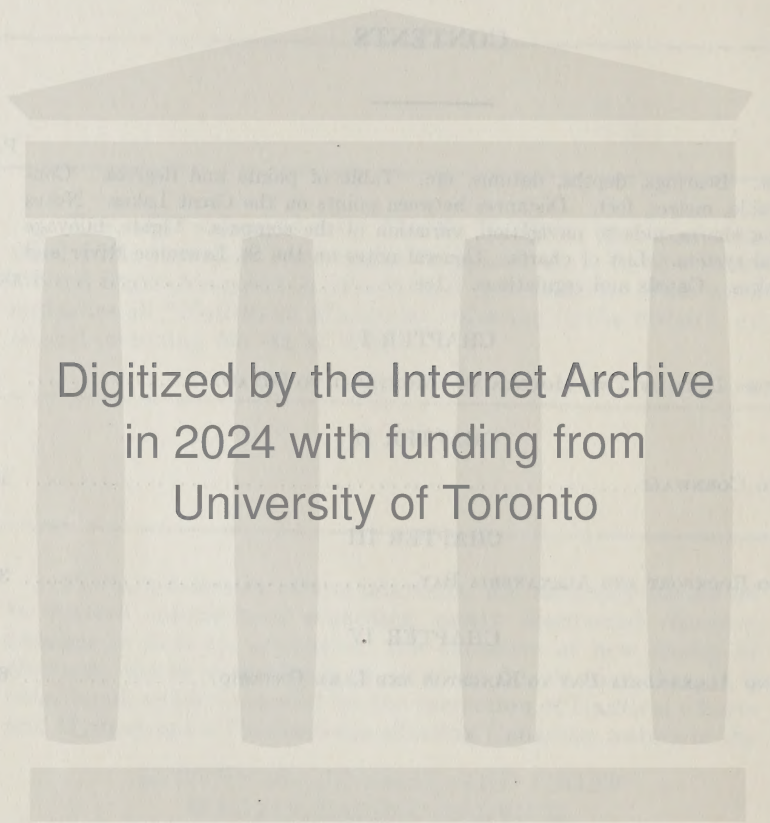
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NOTICE

This volume should not be used without reference to the latest Supplement and Notices to Mariners affecting it which may have been published.

A Supplement to this volume is published periodically until the latter is again taken up for revision.

After the publication of Supplement No. 1, each succeeding Supplement cancels the former.

The publication of all Supplements is announced in Canadian Notices to Mariners.

The latest Supplement to this volume will be obtainable from the Department of Mines and Resources, upon payment of fifty cents.

CAUTION

BEARINGS in this work are true unless otherwise stated and where given in degrees, they are reckoned clockwise from 0° (**NORTH**) to 360°.

The **bearings of lights** are given from **seaward**.

DEPTHS are given below **chart datum level**, where not otherwise stated.

DISTANCES.—To avoid any possible confusion with the system adopted in the United States Government Sailing Directions for the lakes, the distances in this work are given in statute or land miles of 1,760 yards, eight of which are approximately equivalent to seven nautical miles of 2,025 yards, as represented on the east and west margins of the charts. The longer distances, however, have the equivalents in nautical miles bracketed with them.

A **cable's length** is assumed to be equal to the tenth part of a nautical mile 100 fathoms or 200 yards.

HEIGHTS on the land are given above mean summer level of the river.

For the **VARIATION** the chart should be consulted.

The **DATUMS** for the soundings, mentioned herein, are as follows:

For **Lake St. Louis** between Lachine and Soulanges Canal, the soundings are reduced to an elevation of 66·46 above Mean Sea Level and correspond to 15·5 feet above the entrance sill of lock No. 1, Soulanges Canal, 13·5 feet above the upper entrance sill of new lock No. 5, Lachine Canal and 9 feet above the lower entrance sill of the new lock, Ste. Anne Canal.

For **Lake St. Francis** the soundings are reduced to a Low Water datum which at Coteau Landing is 150·97 feet above Mean Sea Level and 15·99 feet above the upper entrance sill of lock No. 5, Soulanges Canal.

For the **St. Lawrence River** between **Cornwall** and **Kingston**, the soundings are reduced to Standard Low Water adopted by Canada and the United States which corresponds to the sloping surface of the river when Lake Ontario is at an elevation of 243·00 feet above Mean Sea Level.

For **Lake of Two Mountains** the soundings are reduced to a Low Water datum which at Ste. Anne is 68·57 feet above Mean Sea Level and 9 feet above the upper entrance sill of the new lock; at Carillon the datum is 9 feet above the lower entrance sill of lock No. 1, Carillon Canal.

For the **Ottawa River** between **Carillon** and **Grenville**, the soundings are reduced to the sloping surface of the water at Extreme Low Water observed in 1922 and correspond to a depth of 9·8 feet of water on the upper mitre sill of lock No. 2, Carillon Canal and 11·99 feet on the lower mitre sill of lock No. 3, Grenville Canal.

For the **Ottawa River** between **Grenville** and **Ottawa**, the soundings are reduced to the sloping surface of the river at Extreme Low Water observed in 1881 and correspond to a depth of 4·5 feet of water on the lower mitre sill of the lower entrance lock at the Rideau Canal, and 8·9 feet on the upper mitre sill at the upper entrance lock of the Grenville Canal.

TABLE OF POINTS AND DEGREES

Points	° /	Points	° /	Points	° /
North.....	0 0	N.N.E. $\frac{1}{4}$ E.....	30 56	N.E. by E. $\frac{1}{2}$ E.....	61 52
N. $\frac{1}{4}$ E.....	1 24	N.N.E. $\frac{1}{4}$ E.....	32 20	N.E. by E. $\frac{3}{8}$ E.....	63 17
N. $\frac{1}{2}$ E.....	2 49	N.E. by N.....	33 45	N.E. by E. $\frac{1}{4}$ E.....	64 41
N. $\frac{3}{4}$ E.....	4 13	N.E. $\frac{1}{4}$ N.....	35 09	N.E. by E. $\frac{1}{8}$ E.....	66 05
N. $\frac{1}{2}$ E.....	5 37	N.E. $\frac{1}{4}$ N.....	36 34	E.N.E.....	67 30
N. $\frac{1}{4}$ E.....	7 02	N.E. $\frac{1}{8}$ N.....	37 58	E. by N. $\frac{1}{8}$ N.....	68 54
N. $\frac{1}{8}$ E.....	8 26	N.E. $\frac{1}{8}$ N.....	39 22	E. by N. $\frac{1}{4}$ N.....	70 19
N. $\frac{1}{8}$ E.....	9 50	N.E. $\frac{1}{8}$ N.....	40 47	E. by N. $\frac{3}{8}$ N.....	71 43
N. by E.....	11 15	N.E. $\frac{1}{4}$ N.....	42 11	E. by N. $\frac{1}{2}$ N.....	73 07
N. by E. $\frac{1}{8}$ E.....	12 39	N.E. $\frac{1}{8}$ N.....	43 35	E. by N. $\frac{3}{8}$ N.....	74 32
N. by E. $\frac{1}{4}$ E.....	14 04	N.E.....	45 00	E. by N. $\frac{1}{4}$ N.....	75 56
N. by E. $\frac{3}{8}$ E.....	15 28	N.E. $\frac{1}{4}$ E.....	46 24	E. by N. $\frac{1}{8}$ N.....	77 20
N. by E. $\frac{1}{2}$ E.....	16 52	N.E. $\frac{1}{4}$ E.....	47 49	E. by N.....	78 45
N. by E. $\frac{3}{8}$ E.....	18 17	N.E. $\frac{1}{8}$ E.....	49 13	E. $\frac{7}{8}$ N.....	80 09
N. by E. $\frac{1}{4}$ E.....	19 41	N.E. $\frac{1}{8}$ E.....	50 37	E. $\frac{3}{4}$ N.....	81 34
N. by E. $\frac{1}{8}$ E.....	21 05	N.E. $\frac{1}{8}$ E.....	52 02	E. $\frac{5}{8}$ N.....	82 58
N.N.E.....	22 30	N.E. $\frac{1}{4}$ E.....	53 26	E. $\frac{1}{2}$ N.....	84 22
N.N.E. $\frac{1}{4}$ E.....	23 55	N.E. $\frac{1}{8}$ E.....	54 50	E. $\frac{3}{8}$ N.....	85 47
N.N.E. $\frac{1}{4}$ E.....	25 19	N.E. by E.....	56 15	E. $\frac{1}{4}$ N.....	87 11
N.N.E. $\frac{3}{8}$ E.....	26 43	N.E. by E. $\frac{1}{8}$ E.....	57 39	E. $\frac{1}{8}$ N.....	88 35
N.N.E. $\frac{1}{2}$ E.....	28 07	N.E. by E. $\frac{1}{4}$ E.....	59 04	East.....	90 00
N.N.E. $\frac{3}{8}$ E.....	29 32	N.E. by E. $\frac{3}{8}$ E.....	60 29		

Similarly with the other quadrants.

CONVERSION TABLES

FATHOMS TO METRES

Fathoms	Metres	Fathoms	Metres	Fathoms	Metres
$\frac{1}{2}$	0.5	$3\frac{3}{4}$	6.9	$7\frac{1}{2}$	13.7
$\frac{3}{4}$	0.9	4.....	7.3	8.....	14.6
$\frac{1}{4}$	1.4	$4\frac{1}{4}$	7.8	$8\frac{1}{2}$	15.5
1.....	1.8	$4\frac{1}{2}$	8.2	9.....	16.5
$1\frac{1}{4}$	2.3	$4\frac{3}{4}$	8.7	10.....	18.3
$1\frac{1}{2}$	2.7	5.....	9.1	20.....	36.6
$1\frac{3}{4}$	3.2	$5\frac{1}{4}$	9.6	30.....	54.9
2.....	3.7	$5\frac{1}{2}$	10.1	40.....	73.2
$2\frac{1}{4}$	4.1	$5\frac{3}{4}$	10.5	50.....	91.4
$2\frac{1}{2}$	4.6	6.....	11.0	60.....	109.7
$2\frac{3}{4}$	5.0	$6\frac{1}{4}$	11.4	70.....	128.0
3.....	5.5	$6\frac{1}{2}$	11.9	80.....	146.3
$3\frac{1}{4}$	5.9	$6\frac{3}{4}$	12.3	90.....	164.6
$3\frac{1}{2}$	6.4	7.....	12.8	100.....	182.9

FEET TO METRES

Feet	Metres	Feet	Metres	Feet	Metres
1.....	0.3	11.....	3.4	21.....	6.4
2.....	0.6	12.....	3.7	22.....	6.7
3.....	0.9	13.....	4.0	23.....	7.0
4.....	1.2	14.....	4.3	24.....	7.3
5.....	1.5	15.....	4.6	25.....	7.6
6.....	1.8	16.....	4.9	26.....	7.9
7.....	2.1	17.....	5.2	27.....	8.2
8.....	2.4	18.....	5.5	28.....	8.5
9.....	2.7	19.....	5.8	29.....	8.8
10.....	3.0	20.....	6.1	30.....	9.1

Table I.—DISTANCES BETWEEN POINTS ON GREAT LAKES

	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	
1 Port Arthur.....	1212	1094	1034																											
2 Duluth.....	1334	1216	1156																											
3 Ashland.....	1288	1170	1110																											
4 Houghton.....	1160	1042	982																											
5 Marquette.....	1099	981	921																											
6 Sault Ste. Marie ¹	939	821	761																											
7 Green Bay.....	1115	997	937																											
8 Milwaukee.....	1176	1058	998																											
9 Chicago.....	1241	1123	1063																											
10 Muskegon.....	1141	1023	963																											
11 Alpena.....	827	709	649																											
12 Bay City.....	882	714	654																											
13 Goderich.....	735	617	557																											
14 Collingwood.....	928	810	750																											
15 Midland.....	936	818	758																											
16 Port Huron ²	670	552	492																											
17 Detroit (Woodward Ave.).....	608	490	430																											
18 Toledo (river mouth).....	601	483	423																											
19 Cleveland (main entrance).....	524	406	346																											
20 Ashtabula.....	468	350	290																											
21 Conneaut.....	456	338	278																											
22 Erie.....	429	311	251																											
23 Buffalo (north entrance).....	389	268	208																											
24 Port Colborne.....	364	246	186																											
25 Rochester.....	266	147	89																											
26 Oswego.....	227	108	55																											
27 Toronto.....	338	219	161																											
28 Kingston.....	182																													
29 Ogdensburg.....	120																													
30 Montreal.....	0																													

EXPLANATION

Distances in these tables are expressed to the nearest even statute mile; fractions of $\frac{1}{2}$ mile or more being taken as a full mile and those under the half dropped. The results are, therefore, at times inconsistent by 1 mile in their comparative differences. Thus, measured dis-

tances to two points given may differ uniformly by 0.8 mile; if the respective distances to the two points from a certain port measure 116.0 and 115.2, they appear in the table as 116 and 115, a difference of 1 mile; whereas from the next port listed, the distances to the same two points may measure 105.4 and 104.6, and both will appear in the table as 105.

Measurements are by the shortest marked or safe direct courses, starting (unless otherwise noted) from the main entrances between pierheads of breakwaters or piers, or from the principal landings of open roadsteads. Where landings are appreciably remote from protected entrances, the appropriate further distances, if desired, may be ascertained from the harbour descriptions or from charts.

Points in this table are arranged in the order of their location on the several lakes in the following sequence: Lake Superior, Lake Michigan, Lake Huron, Lake Erie, and Lake Ontario.

The distance between any two points appears in the line extending horizontally from the point first in order in the list and in the column headed by the other point.

¹ From abreast east end of U.S. centre pier.
² From foot of Grand River Ave.

Table II.—DISTANCES BETWEEN POINTS ON LAKE ONTARIO AND ST. LAWRENCE RIVER

(From U.S. Government publications)

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2
	Montreal	Lachine Canal	Soulanges Canal	St. Regis	Cornwall	Cornwall Canal	Farran Point Canal	Rapide Plat Canal	Galop Canal	Ogdensburg	Brockville	Alexandria Bay	Thousand Island Park	Clayton	Gananoque	Kingston	Picton	Deseronto	Belleville	Trenton	Cobourg	Port Hope	Toronto	Hamilton	Port Weller	Niagara-on-the-Lake	Rochester	Oswego	Sacketts Harbor	Cape Vincent
1	Port Colborne.....																													
2	Cape Vincent.....																													
3	Sacketts Harbor.....																													
4	Oswego.....																													
5	Rochester (Charlotte).....																													
6	Niagara-on-the-Lake.....																													
7	Port Weller.....																													
8	Hamilton.....																													
9	Toronto (east entrance).....																													
10	Port Hope.....																													
11	Cobourg.....																													
12	Trenton.....																													
13	Belleville.....																													
14	Deseronto.....																													
15	Picton.....																													
16	Kingston.....																													
17	Gananoque.....																													
18	Clayton.....																													
19	Thousand Island Park.....																													
20	Alexandria Bay.....																													
21	Brockville.....																													
22	Ogdensburg.....																													
23	Galop Canal ¹																													
24	Rapide Plat Canal ¹																													
25	Farran Point Canal ¹																													
26	Cornwall Canal ¹																													
27	Cornwall.....																													
28	St. Regis.....																													
29	Soulanges Canal ¹																													
30	Lachine Canal ¹																													
31	Montreal.....																													

Points in this table are arranged in geographical sequence proceeding westward along the south shore and returning eastward along the north shore of the lake and down St. Lawrence River.

For determining distances to points located in other lakes, distances from all places listed in this table are given to the initial point No. 1, which also appears in Table I. The through distance from a given point in this table to a given point in Table I is the sum of the respective distances to each given point from the initial point which is common to the two tables. Thus, Port Colborne being the common point for determining distances from Lake Ontario and St. Lawrence River points to points in Lake Superior, a through distance would be derived as follows:

Port Colborne to Cornwall.....	294
Port Colborne to Port Arthur.....	848
Cornwall to Port Arthur.....	1,142

¹ From upper end of canal.
* To Toronto west entrance.

EXPLANATION

Explanation generally applicable to both tables is published in Table I.

NOTES CONCERNING CHARTS, LISTS OF LIGHTS, SAILING DIRECTIONS, AND ON SUBJECTS OF GENERAL INTEREST TO MARINERS

In the following general notes, acknowledgment of indebtedness must be made to the Admiralty publications of a similar nature.

A great amount of matter has been transcribed almost bodily from the above authorities.

The principal published guides to navigation—the Charts, the Sailing Directions, Tide and Current Tables, List of Lights and Fog Signals, List of Radio Stations—are all affected by the continual changes and alterations that take place, and mariners and owners are cautioned to use only the latest and corrected official editions of these publications.

Of these, the Charts should always be, so far as our knowledge permits, correct to date of publication or date of corrections made in the Hydrographic Office, as given in the lower left-hand corner. The Light Lists, and other guides mentioned above, should be consulted for changes made after the chart was issued. The Sailing Directions, however, cannot from their nature, be so corrected, and in all cases, where they differ from charts of later date, the latter must be taken as the guide.

When navigating narrow channels, approaching or entering harbours, or other restricted passages, the large scale charts of such waters should be used.

Corrections from Supplements.—Notations referring to the Supplements should be made on the pages of the Sailing Directions affected. 20

Corrections from Notices to Mariners.—All small but important corrections, that can be made by hand, are published in “Notices to Mariners”, and masters should at once place them on the charts to which they refer; when large corrections become necessary a new edition of the chart is issued. These new editions are issued principally because of changes in depths, channels, or in aids to navigation, and it is both dangerous and reprehensible to continue the use of the old charts. 25

In any communication with Hydrographic Offices concerning charts, the number of the chart (which will be found in the lower right-hand corner) should be given, as well as the date of publication (found below the lower middle margin) and dates of corrections, that the edition referred to may be known. 30

The **Canadian Lists of Lights and Fog Signals** are published annually, about March 1 of each year. Alterations that take place after issue are notified to the public, and such alterations should be immediately noted in lists and on charts. 35

The Lists of Lights should always be consulted as to the details of a light, as the description in the Sailing Directions or on the chart may be obsolete, in consequence of changes made since publication.

The **Sailing Directions** are not corrected between issues, except occasionally for very important new rocks or dangers. “Notices to Mariners” referring to each volume are published from time to time. 40

When “Notices to Mariners” have accumulated since the last revision of the Sailing Directions, a supplement may be issued. This supplement will contain all notices issued and notes as to cancellation of certain portions of the edition of Sailing Directions to which they refer. 45

Whenever Charts, Sailing Directions or Lists of Lights are corrected by hand, a note to that effect should be written on margin with date and authority for the correction.

The Use of Charts as Navigational Aids, and General Remarks Relating to Practical Navigation

1. *Accuracy of a Chart.*—The value of a chart must manifestly depend upon the accuracy of the survey on which it is based, and this becomes more important 5 the larger is the scale of the chart.

To estimate this, the date of the survey, which is always given in the title, is a good guide. Besides the changes that, in waters where sand or mud prevails, may have taken place since the date of the survey, the earlier surveys were mostly made under circumstances that precluded great accuracy of detail, and, 10 until a plan founded on such a survey is tested, it should be regarded with caution. It may, indeed, be said that, except in well-frequented harbours and their approaches, no surveys yet made have been so minute in their examination of the bottom as to make it certain that all dangers have been found. The fullness or scantiness of soundings is another method of estimating the complete- 15 ness of a chart. When the soundings are sparse or unevenly distributed, it may be taken for granted that the survey was not made in great detail.

Close examination by sounding is the only method by which surveys on a large scale can generally be made, and in view of the vast mileage of surveys yet requiring completion in the interests of navigation it would be a waste of 20 time to undertake large scale coast surveys.

Blank spaces and irregular gaps among soundings on older charts mean that no soundings have been obtained in these spots. When the surrounding soundings are deep it may with fairness be assumed that in the blanks the water is also deep; but when they are shallow, or it can be seen from the rest 25 of the chart that reefs or banks are present, such blanks should be regarded with suspicion. This is especially the case off rocky coasts, and it should be remembered that in waters where rocks abound it is always possible that a survey, however complete and detailed, may have failed to find every small patch.

30 A wide berth should therefore be given to every rocky shore or patch, and *this rule should be invariably followed, viz., that instead of considering a coast to be clear unless it is shown to be foul, the contrary should be assumed.*

2. *Fathom Lines, a Caution.*—Except in plans of harbours that have been surveyed in detail, the five-fathom line (in some recent editions the six-fathom 35 line) on most charts is to be considered as a caution or danger line against unnecessarily approaching the shore or bank within that line, on account of the possibility of the existence of undiscovered inequalities of the bottom, which nothing but an elaborate detailed survey could reveal. In general, in surveys of coasts or of little frequented anchorages, the necessities of navigation do not 40 demand the great expenditure of time required for such a detailed survey. It is not contemplated that ships will approach the shores in such localities without taking special precautions.

The ten-fathom line is, on rocky shores, another warning, especially for ships of heavy draught.

45 Charts where no fathom lines are marked must be specially regarded with caution, as it generally means that soundings were too scanty and the bottom too uneven to enable them to be drawn with accuracy.

Isolated soundings, shoaler than surrounding depths, should always be avoided, especially if ringed around, as there is no knowing how closely the spot 50 may have been examined.

On river and lake charts those areas tinted blue should always be navigated with extreme caution, the colouring always indicating shoal and dangerous waters.

3. *Chart on Largest Scale Always to be Used.*—It sometimes happens that from press of work, only the copper plate of the larger scale chart of a particular locality can at once receive any extensive rearrangement of coast-line or soundings. This is an additional reason, besides the obvious one of the greater detail shown on such chart, why largest scale charts should always be used for navigation. 5

4. *Caution in using Small Scale Charts.*—In approaching the land or dangerous banks, regard must always be had to the scale of the chart used. A small error in laying down a position means only yards on a large scale, whereas on a small scale the same amount of displacement means large fractions of a 10 mile. This is particularly to be observed when coming to anchor on a narrow ledge of convenient depth at some distance from the shore.

For the same reason, bearings to objects *near* should be used in preference to objects farther off, although the latter may be more prominent, as a small error in a bearing or in laying it down on the chart has a greater effect in mis- 15 placing the position the longer the line to be drawn.

5. *Buoys.*—It is manifestly impossible that any reliance can be placed on buoys always maintaining their exact positions. Buoys should therefore be regarded as warnings and not as infallible navigation marks, *especially when in exposed positions*; and a ship should always, when possible, be navigated by 20 bearings or angles on fixed objects on shore and not by buoys.

Light-buoys.—The lights shown by light-buoys cannot be implicitly relied on.

6. *Lights.*—Circles drawn on charts around a light are not intended to give information as to the distance at which it can be seen, but solely to indicate, in the case of lights which do not show equally in all directions, the bearings 25 between which the variation, or visibility, or obscuration of the light occurs.

All the distances given in the Lists of Lights and on the charts for the visibility of lights are calculated for a height of an observer's eye of 15 feet. The table of distances visible due to height, at the beginning of each List of Lights affords a means of ascertaining how much more or less the light is visible 30 should the height of the observer's eye be more or less than 15 feet. The glare of a powerful light is often seen beyond the limit of visibility of the actual rays of the light, but this must not be confounded with the true range. Again, refraction may often cause a light to be seen farther than under ordinary circumstances.

When looking out for a light at night, the fact is often forgotten that from 35 aloft the range of vision is much increased. By noting a star immediately over the light a very correct bearing may be afterwards obtained from the standard compass.

The intrinsic power of a light should always be considered when expecting to make it in thick weather. A weak light is easily obscured by haze, and no 40 dependence can be placed on its being seen.

Coloured lights are also inferior in power to bright or *white* lights, and are more quickly lost under unfavourable circumstances. In some conditions of the atmosphere, *white* lights may have a reddish hue. The mariner should not trust solely to colour where there are sectors, but verify the position by taking a bear- 45 ing on the light. On either side of the line of demarcation, between *white* and *red*, and also between *white* and *green*, there is always a small arc of uncertain colour.

The power of a light can be estimated by remarking its order, as given in the Lists of Lights, in some cases by noting how much its visibility in clear 50 weather falls short of the range due to the height at which it is placed. Thus, a light standing 200 feet above the sea, and only recorded as visible at 10 miles

in clear weather, is manifestly of little brilliancy, as its height would permit it to be seen over 20 miles, if of any power. (*See* table in List of Lights above mentioned.)

The distance from a light cannot be estimated either by its brilliancy or its dimness.

7. *Fog Signals*.—Sound is conveyed in a very capricious way through the atmosphere. Apart from wind, large areas of silence have been found in different directions and at different distances from the fog signal station, in some instances even when in close proximity to it. The apparatus, moreover, for sounding the signal often requires some time before it is in readiness to act. A fog often creeps imperceptibly towards the land, and is not observed by the people at a station until it is upon them; whereas a ship may have been for many hours in it, and approaching the land. In such a case no signal may be made. When sound has to travel against the wind, it may be thrown upwards; in such a case, a man aloft might hear it when it is inaudible on deck. Under certain conditions of the atmosphere, when a fog signal is a combination of high and low notes, one of the notes may be inaudible.

The mariner should not assume—

- (a) That he is out of hearing, because he fails to hear the sound.
- 20 (b) That because he hears a fog signal faintly, that he is at a great distance from it.
- (c) That he is near it, because he hears the sound plainly.
- (d) That the distance from and the intensity of the sound on any one occasion, is a guide to him for any future occasion.
- 25 (e) That the fog signal has ceased sounding, because he does not hear it even when in close proximity.

Taken together, these facts should induce the utmost caution in closing the land in fogs, and the use of the lead should not be neglected.

8. *Change of Variation of the Compass*.—The gradual change in the variation must not be forgotten in laying down positions by bearing on charts. The magnetic compasses placed on the charts for the purpose of facilitating plotting become in time slightly in error, and in some cases, such as with small scales, or when the lines are long, the displacement of position from neglect of this change may be of importance. The compasses are re-engraved when the error amounts to a quarter of a point, but the chart plates cannot be corrected more frequently from the impossibility of making alterations too often on one spot in a copper plate.

In the neighbourhood of Kingston there is an area of magnetic disturbance extending from about a mile above Bayfield Shoal to Snake Island, and from the harbour front to Garden Island. In this area the variation changes 45° in about a mile.

LIGHTS, BUOYAGE AND SIGNAL SYSTEMS

LIGHTS.—All lights of the Dominion of Canada under the control of the Department of Transport are maintained in operation whenever navigation in the vicinity is open. Lights used solely as harbour lights are not exhibited when the harbour is closed, although the general navigation may remain open. Fishing lights are maintained only during the fishing season. In any case where there is reasonable doubt whether the light is required it is kept in operation.

Light vessels.—**Riding lights**.—There is no uniformity of practice in regard to Canadian light vessels carrying riding lights.

BUOYAGE.—The following system of buoyage is adopted in the waters of the Dominion of Canada:—

Approaching from seaward, all buoys on the **starboard** side of the channel are painted *red*, and, if numbered, marked with even numbers, and must be left on the starboard hand. 5

Approaching from seaward all buoys on the **port** side of the channel are painted *black*, and, if numbered, marked with odd numbers, and must be left on the port hand.

Numbers, when used, are in consecutive order commencing from seaward.

Buoys painted *red* and *black* in horizontal bands mark **middlegrounds**, and 10 are left on either hand.

Buoys painted *white* and *black* in vertical stripes mark **mid-channel** or the **fairway**, and may be passed on either hand. These buoys are rarely used.

Pillar light, bell, and whistle buoys mark special positions, a detailed description of which is given when the mark is first established. 15

Conical buoys, when used, are always on the starboard side of the channel, and can buoys on the port side; conical topmarks are on starboard hand buoys, and cylindrical topmarks on port hand buoys. All starboard hand spar buoys have pointed tops and all port hand spar buoys have flat tops; otherwise the shapes of buoys have no special significance at present. 20

The rule for colouring buoys is also applicable to beacons and other day marks, so far as it may be practicable to carry it out.

The buoys in Lake St. Louis are numbered consecutively from Lachine westward, and also bear the letter S (St. Louis). From the head of Soulanges Canal westward through Lake St. Francis they bear the letter F (St. Francis); 25 from the head of Cornwall Canal and up the river to Brockville they bear the letter U (Upper St. Lawrence); and from Brockville westward they bear the letter T (Thousand Islands).

The spar buoys in the river are swift current buoys, ballasted with iron rings to keep them upright. 30

Light-buoys and light-beacons.—**Starboard hand** buoys show *flashing red* lights and port hand buoys show *flashing white* lights, that is, red buoys will carry *red* lights, and black buoys *white* lights.

The following are the regulations governing the use of bushes in marking channels in Canada: 35

Hardwood bushes shall be used on the **starboard** side of channels.

Evergreen bushes shall be used on the port side of channels.

Caution.—Buoys marking outlying dangers, owing to their exposed positions, are always liable to break adrift or to other accident; therefore implicit reliance should not be placed on their being in position. 40

Buoyage Season.—Buoys in the Dominion are, generally speaking, maintained in position during the season of navigation. In localities where the lights are maintained in operation throughout the year, the buoys are always kept in position. In districts where navigation is closed in winter, the buoys are kept out in autumn until the last vessel has cleared, or as late as the ice will 45 allow, with due regard to their safety. The buoys are replaced in the spring, as soon as the ice will permit.

CAUTION.—Damaging Floating Lights.—Masters of vessels who injure, alter, or make fast to any aid to navigation, render themselves liable to a fine of \$200. Any master of a vessel who, through unavoidable accident, has displaced any aid to navigation, must give notice of the same to the nearest Customs officer, or be liable to a fine of \$50.

WRECKS.—Buoys, and the top sides of vessels used for marking wrecks, are painted *green* with a white inscription, and moored, when possible, near the side of the wreck next to mid-channel.

Wreck-marking vessels exhibit:—

10 By day.—Three balls from a yard, 20 feet above the sea; two placed vertically on the side that shipping may safely pass and one on the other side.

By night.—Three *fixed white* lights, similarly arranged; the ordinary riding light is not shown.

Mariners must pass on that side of a wreck-marking vessel on which the 15 two balls or two lights are shown.

RADIO AIDS TO NAVIGATION SERVICE

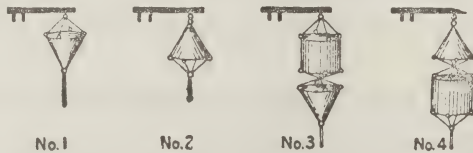
For full details of Canadian stations mariners are referred to “Radio Aids to Navigation”, issued annually by the Radio Division, Department of Transport, Ottawa. Additions or alterations to the same will be contained in the regular 20 Notices to Mariners issued by that Department.

For details of the United States stations mariners should consult “Radio Aids to Navigation, Great Lakes” published by the Hydrographic Office, United States Navy Department. Corrections to this publication will be published in the weekly Notices to Mariners issued by the Branch Hydrographic Office, 25 Detroit, Michigan.

METEOROLOGICAL SERVICE STORM SIGNAL STATIONS

In addition to the radio stations, from which vessels may obtain weather reports and information regarding dangers to navigation, storm signal stations are maintained at many lake ports by the Canadian and United States Govern- 30 ments. In the area covered by this work there is a station at Ogdensburg, New York, and Kingston, Ontario.

Signals.—Canadian storm signals are displayed from a gallows, and consist of a black cone and black cylindrical drum by day and *red* and *white* lights at night as follows:—



35 No. 1.—A cone, apex down, indicates the probability of a gale; at first, from an easterly direction.

No. 2.—A cone, apex up, the probability of a gale; at first, from a westerly direction.

40 No. 3.—A cylinder over a cone, apex down, indicates the probability of a heavy gale; at first, from an easterly direction.

No. 4.—A cone, apex up, over a cylinder, the probability of a heavy gale; at first, from a westerly direction.

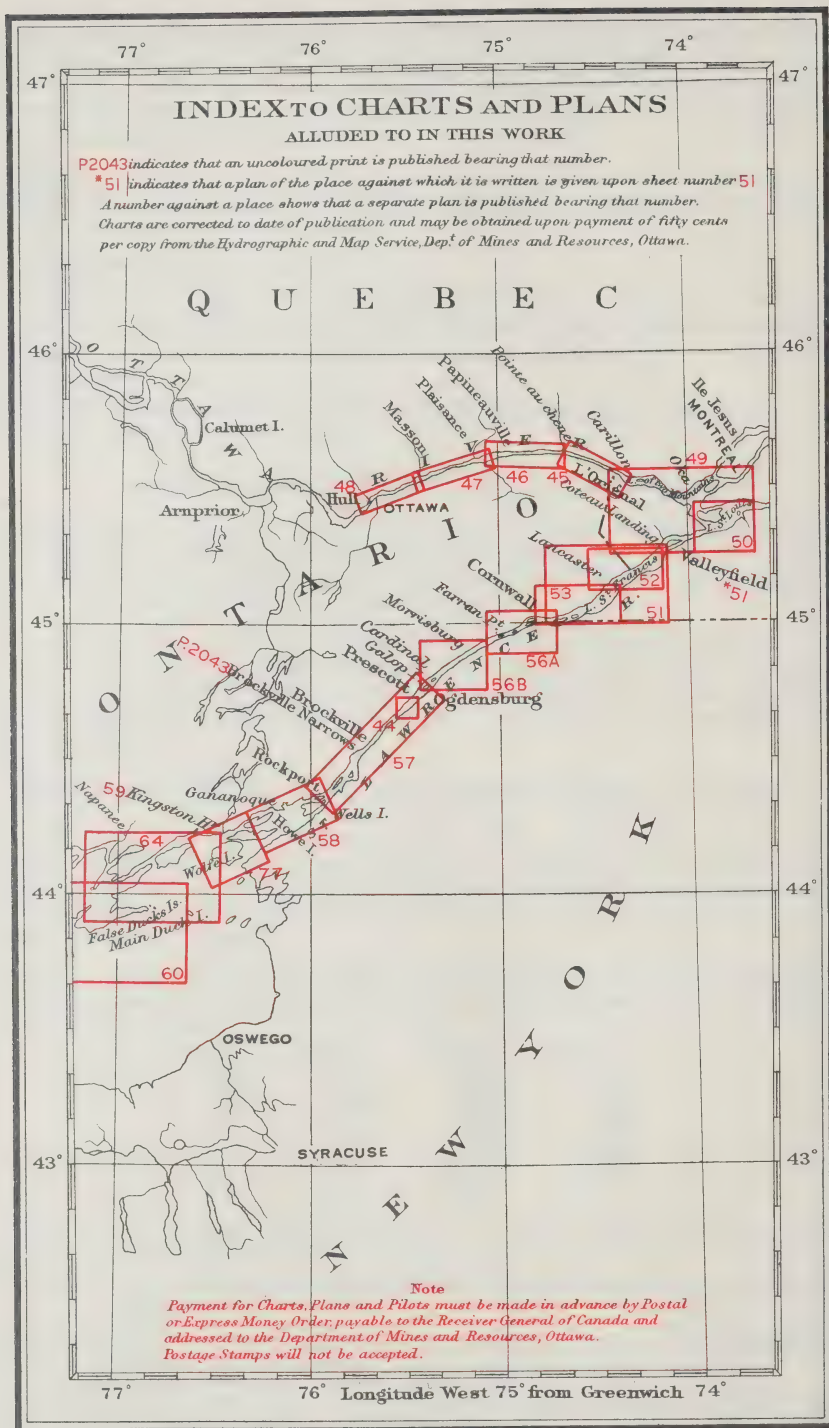
The *night* signal corresponding to Nos. 1 and 3, is a *red* light; that, corresponding to Nos. 2 and 4, is a *red* light over a *white* light.

ALLUDED TO IN THIS WORK

*51 indicates that a plan of the place against which it is written is given upon sheet number 51

A number against a place shows that a separate plan is published bearing that number.

Charts are corrected to date of publication and may be obtained upon payment of fifty cents per copy from the Hydrographic and Map Service, Dep.^t of Mines and Resources, Ottawa.



Published by the Hydrographic and Map Service, Surveys and Engineering Branch,
Department of Mines and Resources, Ottawa, June, 1942.

LIST OF CHARTS COVERING THIS VOLUME

PUBLISHED BY THE CANADIAN HYDROGRAPHIC SERVICE

Price 50 cents each

Chart No.	TITLE	
	St. Lawrence River	5
49	Lachine to Coteau and Carillon	
50	Lake St. Louis	
51	Lake St. Francis (general chart) Coteau-Valleyfield	
52	Lake St. Francis, Coteau Landing to Lancaster Bar	
53	Lake St. Francis, Lancaster Bar to Cornwall	10
56A	Cornwall Island to Weaver Point	
56B	Weaver Point to Cardinal	
44	Prescott (Lower Lakes Terminal)	
57	Galop Island to Rockport	
P2043	Brockville Narrows	15
58	Rockport to Howe Island	
77	Howe Island to Kingston	
59	Kingston Harbour	
64	Kingston to False Ducks	
	Ottawa River	20
45	Carillon to L'Orignal	
46	Pte. aux Chêne to Papineauville	
47	Plaisance to Masson	
48	Masson to Ottawa	
	PUBLISHED BY THE UNITED STATES LAKE SURVEY	25
21	Clayton to Stony Point	

GENERAL PHYSICAL FEATURES OF THE ST. LAWRENCE RIVER
AND GREAT LAKES SYSTEM

The St. Lawrence River and Great Lakes system comprising an estuary and a series of connected lakes, affords a course of water communication from 30 the sea at the Gulf of St. Lawrence to the middle of the North American continent. From its mouth near longitude $64\frac{1}{4}^{\circ}$ W. to the head of the system at the west end of Lake Superior, about longitude $92\frac{1}{4}^{\circ}$ W. this waterway has a total length of about 1,635 nautical miles.

The River St. Lawrence which constitutes the main outlet channel of the 35 system has its source in Lake Ontario at an elevation of 243 feet above sea-level, and its course to the sea assumes several lake-like expansions such as, St. Francis, St. Louis, and St. Peter. At other places it forms rapids which are circumnavigated by canals accommodating vessels of 14-foot draught and 255 feet length. The distance by this waterway from the Strait of Belle Isle to 40 Port Arthur or Fort William on the northwest coast of Lake Superior is 1,933 nautical miles (2,226 statute miles); the distance to Duluth is 2,039 nautical miles (2,348 statute miles); the distance to Chicago is 1,959 nautical miles (2,255 statute miles); from the Strait of Belle Isle to Montreal the distance

is 878 nautical miles (1,011 statute miles); and from Quebec to Montreal the distance is 138½ nautical miles (160 statute miles).

Gulf of St. Lawrence to Quebec.—(See “St. Lawrence River Pilot, below Quebec.”)—The estuary of the St. Lawrence begins to broaden out at Quebec and increases from a width of 8 miles at the foot of Orleans Island to 24 miles at Pointe des Monts, and about 70 miles at the western end of Anticosti Island. According to the Royal Proclamation of 1763 and by decision of the Canadian Geographic Board, the line constituting the transition of the estuary into the Gulf of St. Lawrence, extends from Cap des Rosiers, at the eastern end of the Gaspé Peninsula to the mouth of the St. John River on the north shore about abreast of the western end of Anticosti Island.

General Physical Features (below Quebec).—From Montreal to Quebec the shores of the river are comparatively low, but at the City of Quebec the mountains begin to close in on both sides of the river valley and the lower portion of the river is bounded on both sides by mountain ranges. At Cape Tourmente, 25 miles below Quebec, the Laurentian highlands come out of the river as a mountain, 1,874 feet high. They follow on along the shore past the mouth of the Saguenay River, rising to 2,551 feet at Les Eboulements and over 1,000 feet on the Saguenay. They retreat on the lower river and continue at varying distances in rear of the coast to the Strait of Belle Isle.

The south coast of the river is comparatively low, but below Quebec the Appalachians can be seen as a mountain background which comes out on the river at Matane. The mountains here known as the “Shickshocks” continue thence along the south shore and form the rough tableland of Gaspé. In their course they occasionally rise to 3,700 and 4,000 feet, but their average height on the peninsula of Gaspé is 3,000 feet.

Navigation on the river is closed in winter although the river is not frozen below Quebec. In the spring the Government icebreakers are very useful in preventing ice blockades. As a result, the river is open rather earlier than would otherwise be the case.

Tributaries.—There are many tributaries of the St. Lawrence River,—the Saguenay, Montmorency, St. Maurice and Ottawa are the most northern affluents, and the Chaudière, St. Francis, and Richelieu are important streams flowing in from the south. Lake Champlain which discharges into the latter navigable stream, has river and canal connection with tidewater at New York for shallow draught craft.

Quebec Harbour to Montreal Harbour.—(See “St. Lawrence River Pilot Quebec to Montreal.”)—From Montreal to Quebec the river has an average width of two and one-third miles, a maximum width of seven and one-quarter miles in Lake St. Peter, and a minimum width of 1,800 feet a short distance above Quebec.

Lake St. Peter is shallow, but by dredging this and other reaches, a 32½-foot channel has been constructed from Montreal to the sea.

The river between Montreal and Quebec is crossed by two bridges with 45 clearance for the largest vessels.

Improvements.—The control of the St. Lawrence Ship Channel, its regulations and improvements, from the Gulf of St. Lawrence to Montreal Harbour is under the Department of Transport, whose annual reports give full information as to the history, development and operation of that channel.

From Montreal Harbour westward to the head of Lake Superior the improvements of the Canadian channels are under the jurisdiction of the Department of Public Works.

By means of channel improvements, Montreal Harbour has been placed at the head of ocean navigation and from this point begin the canal systems of the St. Lawrence River, by means of which the several rapids obstructing the river channel proper, are overcome, and give access through the St. Lawrence Canals, the Welland Ship Canal, the Great Lakes and the Sault Ste. Marie Canal to the head of Lake Superior. 5

The difference in level between the point on the St. Lawrence River near the Harbour of Three Rivers where tidal influence ceases, and Lake Superior, is about 600 feet.

A detailed description of the river and directions for its ascent from the gulf to Lake Ontario are given in the various aforementioned St. Lawrence River Pilots and in the ensuing pages of this publication.

ST. LAWRENCE RIVER ABOVE MONTREAL

Montreal Harbour to Lake Ontario.—The portion of the river above Montreal, somewhat generally known as the upper St. Lawrence, and extending from the foot of Lachine Canal in Montreal Harbour to Kingston Harbour on the Canadian shore, and Tibbetts Point on the United States shore, at the foot or east end of Lake Ontario, has a total length of 158 nautical miles. Of this length there are 117 miles of natural river and open lake expansions and 41 miles of canalized water. The average width of the river is $1\frac{1}{2}$ miles. The lake expansions are Lakes St. Louis and St. Francis. The former, reached from Montreal by the Lachine Canal, is 12 miles long, and has a greatest width of $5\frac{1}{4}$ miles. Lake St. Francis is 27 miles long and with a maximum width of 4 miles. 15 20

This portion of the river is in part an international waterway, the Canadian-United States boundary line falling approximately in the middle of the stream from the head of Lake St. Francis near Cornwall to Lake Ontario. The portion from Montreal to Cornwall, 61 nautical miles in length, is entirely within Canadian territory and all the canals throughout its entire length are owned and operated by the Canadian Government, but the use of these are free to the vessels of foreign countries. 25 30

Between the Prescott terminals, 118 statute miles above Montreal, and Kingston, at the foot of Lake Ontario, the main navigation channel is partly on the Canadian side of the International Boundary and partly on the United States side. Improvements in this section of the river have now made available a depth of 25 feet. 35

Canals.—General Description.—The Dominion Government canals on the through route between Montreal and Lake Superior are the Lachine, Soulanges, Cornwall, Farran Point, Rapide Plat, Galop, Welland Ship and Sault Ste. Marie. Their total length is 75.92 statute miles; total lockage or difference of elevation directly overcome by locks, 554 feet. The number of locks which a vessel would encounter during its passage from Montreal, at the head of ocean navigation, to the head of Lake Superior, is 30. 40

The canals on the St. Lawrence River, the Lachine, Soulanges, Cornwall, Farran Point, Rapide Plat and Galop, the latter three being collectively known as the Williamsburg Canals, as at present constructed, control the size of vessel that can traverse the through route, and the limiting lock in this respect is Lock No. 17, situated at Cornwall on the Cornwall Canal. This lock has the following dimensions: length between hollow quoins of gates, 270 feet; width of bottom, 43 feet 8 inches; width at coping, 45 feet 3 inches; depth of water over mitre sills, 14 feet, which will accommodate vessels having the ordinary perpendicular and pointed bow and rounded stern up to an overall length of 255 feet. 45 50

Permissible or Limiting Draught.—The draught of vessels permitted to enter and pass through these canals is dependent upon the water surface elevations of Montreal Harbour and the river above, which vary from time to time. Although the normal depth of water over the sills is ordinarily advertised as 5 14 feet, the permissible draught during the low water period of the year 1931 was 13 feet 8 inches in the month of August, and 13 feet 3 inches in the month of October with respect to the Lachine Canal.

Note.—The permissible draught is published from time to time in “Notices to Mariners”.

10 The upper entrance to the Galop Canal, the last of the St. Lawrence Canals, is 113 statute miles above Montreal, and 5 miles above this point the Lower Lakes Terminals, which are referred to as the Prescott Terminals, are situated. These terminals, completed in 1930, are under the control of the Department of Transport and consist mainly of a reinforced concrete elevator of 5,500,000
15 bushels capacity, equipped with the necessary facilities for the unloading and storing of grain received from upper lake freighting steamers; of the forwarding of such grain, either by St. Lawrence River canalized vessels, or by rail as required. The wharves at the terminal will accommodate vessels drawing up to 24 feet. (*See page 45*).

20 Farran Point, Rapide Plat Canals and the terminal sections of the Galop Canal are electrically operated. Following is a detailed description of the St. Lawrence Canals:

LACHINE CANAL

	Length of canal.....	8.74 miles
25	Number of locks—	
	Lift.....	4
	Guard.....	1
	Dimensions of locks.....	270 feet by 45 feet
	Total rise or lockage.....	46.24 feet
30	Depth of water on sills:—	
	South Lock No. 1	
	{ Normal.....	17 feet 6 inches
	{ Extreme low water.....	13 feet 3 inches
	South Lock No. 2.....	17 feet
35	North Locks Nos. 3 and 4.....	14 feet
	South Lock No. 5 (normally).....	14 feet
	Minimum width of canal at water surface..	150 feet
	Minimum width of canal at bottom.....	140 feet
	Minimum overhead clearance.....	94.8 feet (Transmission Lines)

40 The canal consists of one channel with two distinct systems of locks, the old and the new or enlarged. Old locks Nos. 1, 2, and 5 are situated on the north side, old locks Nos. 3 and 4 are on the south side.

The old locks are still available for navigation. Nos. 1 and 2 are 270 feet by 45 feet and under ordinary water conditions both have 15 feet 6 inches of
45 water on mitre sills. At extreme low water in Montreal Harbour however, old lock No. 1 has only 11 feet 3 inches. Old locks 3, 4, and 5 are 200 feet by 45 feet with only 9 feet of water on sills.

The canal extends from the Harbour of Montreal to Lake St. Louis at the City of Lachine overcoming the Lachine Rapids, the first obstruction to bar
50 the ascent of the St. Lawrence River.

All locks (except old lock 5) and all bridges along the canal are electrically operated. The canal is electrically lighted.

From the head of the Lachine Canal to the foot of the Soulanges the distance is 16 miles and to the foot of the Ste. Anne lock $13\frac{1}{2}$ miles with a normal controlling navigation depth in the latter case of 9 feet.

Note.—Canal distances as given, unless otherwise stated, are in *statute* miles. 5

Lachine Canal—Mileage and General Data

Mileage	Structure, Locality, etc.	Locks				
		No.	Length Between Hollow Quoins	Minimum Width	Depth on Sill	Lift
	(Montreal Harbour—Standard low level, 18·99 above M.S.L.)		ft. in.	ft. in.	ft. in.	ft.
0·00	Montreal Harbour—Mouth of entrance channel.....	1	270 0	45 0	17 6*	12·96
0·04	South lock.....					
0·10	Basin No. 1.....	2	270 0	45 0	17 0	13·50
0·21	South lock.....					
0·28	Bridge 1—Prince Street—"Black's Bridge"—Swing					
0·47	Basin No. 2.....					
0·64	Bridge—Can. National Rys.—Swing					
0·67	Tunnel—Wellington Street.....					
0·76	Tunnel for water pipes—M.W.W.					
1·16	North lock—"St. Gabriel".....	3	270 0	45 0	14 0	9·02
1·23	Bridge 3—Seigneurs Street—Swing					
1·70	" 4—Charlevoix Street—Swing					
1·85	" 5—Atwater Avenue—Swing					
2·07	" Can. Nat. Rys.—Swing					
2·39	Siphon culvert—St. Pierre River					
2·99	North lock—"Cote St. Paul".....	4	270 0	45 0	14 0	9·26
3·27	Bridge 6—Cote St. Paul road—Swing					
3·45	Siphon culvert					
6·27	Bridge 7—Rockfield—Highway bascule					
6·85	" Can. Pacific Ry.—Rockfield					
7·50	South lock—Lachine.....	5	270 0	45 0	14 0†	1·50
7·56	Bridge 8—Lower Lachine road—Swing					
8·74	Lake St. Louis—Mouth of entrance channel					
	Total lift.....					46·24

* The depth on lower sill of lock No. 1 varies with the level of Montreal Harbour. Highest record, 45·25 feet, April 18 1886; lowest, 13·25 feet, November 13, 1933.

† The depth on upper sill of lock No. 5 varies with the level of Lake St. Louis. Highest record, 21·67 feet, May 10, 1908; lowest, 12·00 feet, March 5, 1895.

SOULANGES CANAL

Length of canal..... 14·67 miles

Number of locks—

Lift..... 4

Guard..... 1

10

Dimensions of locks..... 280 feet by 46 feet

Total rise of lockage..... 83·50 feet

Depth of water on sills (normally) 15 feet

Breadth of canal at bottom..... 96 feet

Breadth of canal at water surface. 160 feet

15

Minimum overhead clearance..... 135 feet (Transmission Lines)

The canal extends from Cascades Point to Coteau Landing, overcoming the Cascades Rapids, Cedar Rapids and Coteau Rapids.

The locks on this canal are electrically operated and the canal lighted by electricity.

20

From the head of the Soulanges Canal to the foot of the Cornwall Canal there is a stretch through Lake St. Francis of 31 miles, which is navigable for vessels drawing 14 feet.

Soulanges Canal—Mileage and General Data

Mileage	Structure, Locality, etc.	Locks				
		No.	Length Between Hollow Quoins	Minimum Width	Depth on Sill	Lift
			ft. in.	ft. in.	ft. in.	ft.
0-00	Lake St. Louis—Mouth of entrance channel					
0-25	Cascades Point locks.....	1	280 0	46 0	15 0*	23-50
0-52	“ “	2	280 0	46 0	15 0	23-50
0-89	“ “	3	280 0	46 0	15 0	23-50
0-95	Bridge 1—Quinze Chiens road—Swing					
1-92	Culvert—Bissonette Gully					
2-86	Bridge 2—St. Antoine road—Swing					
3-38	Lock.....	4	280 0	46 0	15 0	12-00
3-57	Guard gates					
3-97	Head-race to power house of M.L.H. & P. Cons.					
5-60	Culvert—Valade Gully					
5-70	Bridge 3—St. Féréol road—Swing					
8-00	Bridge 4—St. Dominique road—Swing					
8-93	Culvert—Rivière a la Graisse					
9-04	Power house					
9-94	Bridge 5—St. Emmanuel road—Swing					
11-25	Culvert—Rivière Rouge					
11-51	Bridge 6—Rivière Rouge road—Swing					
11-96	Siphon culvert—Rivière Delisle					
14-01	Bridge—Canadian National Rys.—Swing					
14-03	Guard lock.....	5	280 0	46 0	15 0†	1-00
14-10	Bridge 7—Coteau Landing highway—Swing					
14-67	Lake St. Francis—Mouth of entrance channel					
	Total lift.....					83-50

* The depth on lower sill of lock No. 1 varies with the level of Lake St. Louis. Highest record, 33-5 feet, February 6, 1918, lowest, 14-6 feet, November 10, 1933.

† The depth on upper sill of lock No. 5 varies with the level of Lake St. Francis. Highest record, 19-0 feet, April 13, 1908; lowest, 15-2 feet, November 19, 1915.

CORNWALL CANAL

5	Length of canal.....	11-00 miles
	Number of locks—	
	Lift.....	5
	Guard.....	1
	Guard gates.....	1
10	*Dimensions of locks.....	270 feet by 45 feet*
	Total rise of lockage.....	48 feet
	Depth of water on sills (normally)	14 feet
	Breadth of canal at bottom.....	90 feet
	Breadth of canal at water surface.	154 feet
15	Minimum overhead clearance.....	150 feet (Transmission Lines)

The Cornwall Canal extends past the Long Sault Rapids from the Town of Cornwall to Dickinson's Landing.

The locks on this canal are electrically operated and the canal lighted by electricity.

* Lock No. 17 is only 43 feet 8 inches wide at the bottom and 45 feet 3 inches wide at the coping. See remarks on page xix.

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Canada Hydrographic and
Map Service

1946



CANADA

1946

Supplement No. 1 to the 1942 Edition

OF THE

ST. LAWRENCE RIVER PILOT

MONTREAL HARBOUR TO KINGSTON HARBOUR
AND INCLUDING OTTAWA RIVER

(Corrected to October 1, 1946)

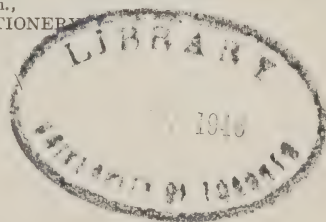


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1946



This Supplement has been compiled from information received in the Hydrographic Service since the publication in 1942 of the fourth edition of the "St. Lawrence River Pilot, Montreal Harbour to Kingston Harbour and including Ottawa River." All information affecting this pilot, up to and including Notice to Mariners No. 56 of 1946 has been embodied in this Supplement.

Obtainable from the Hydrographic and Map Service upon payment of fifty cents.

Pilots, masters or others interested are earnestly requested to furnish information regarding newly discovered dangers, changes in aids to navigation, the existence of new shoals or channels, errors in publications or other information that, it is considered, would be useful for the correction of Nautical Charts and Hydrographic Publications affecting Canadian waters addressed to the

SURVEYOR GENERAL AND CHIEF, HYDROGRAPHIC SERVICE,
DEPARTMENT OF MINES AND RESOURCES,
CONFEDERATION BUILDING,
OTTAWA, CANADA

**SUPPLEMENT No. 1 TO THE 1942 EDITION OF THE ST.
LAWRENCE RIVER PILOT, MONTREAL HARBOUR TO
KINGSTON HARBOUR**

(Corrected to October 1, 1946)

New matter and alterations follow the order of the paging of the "St. Lawrence River Pilot, Montreal Harbour to Kingston Harbour." The pages referred to in this Supplement are those of the same volume, except where specifically mentioned otherwise in the text.

All bearings are true and are given from seaward, unless otherwise stated; where given in degrees they are reckoned clockwise from 000° (North) to 359°.

Page 3.—Line 30: For "on" read "about one cable southwestward of".

Page 5.—Lines 35-36: *Delete* "three red spar buoys mark the south side of this shoal" and *substitute*:—

"The south side of this shoal is marked by two red spar buoys and a red light-buoy showing a *flashing-red* light, the latter being the westernmost of the three."

Page 8.—Line 17: *Add*:—"At the wharf of the International Paper Co., there is a depth of 6 feet."

Page 10.—*Delete* body of paragraph headed "Leading lights" and *substitute*:

"About 3,830 feet 246° from the outer end of the Government wharf, the front light is shown at an elevation of 52 feet from a white slatwork daymark on a pole, with a white shed at its base. The back light is shown at an elevation of 105 feet, from a steel skeleton tower with a white slatted daymark, 1,700 feet 246° from the front light."

Line 44: *Delete* "100 feet frontage" and *substitute*:—

"112 feet frontage and a depth of 8 feet alongside."

Page 12.—*After* line 13 *insert*:—

"Buoys.—Two spar buoys, a red and a black, mark the channel opposite the east end of Lower Duck Island."

Line 19: *Add*:—"Mariners navigating in the vicinity of Green Shoal, are cautioned that due to the concentration of water above the power dams on the Gatineau River and on the Ottawa River each Sunday, there is liable to be a decrease in the depth of water in this vicinity."

Page 13.—After last paragraph *insert*:—

“Wharf.—There is a wharf at Hull immediately below the Alexandra bridge, extending 460 feet from shore. It has a three-level landing head, 130 feet wide, with a depth of 13 feet alongside.”

Page 14.—After paragraph headed “Lachine Canal” *insert*:—

“Signal lights.—At the lower entrance to each of the two No. 1 locks is a signal showing *red, flashing amber* and *green* lights. A *red* light or no light indicates that approaching vessels shall keep clear of the entrance. *Flashing amber* light in conjunction with a *red* light indicates that the lock is being prepared to receive an upbound vessel. A *green* light indicates that the lock is ready to receive a vessel.

The stem of any vessel shall not pass the sign “Limit of Approach” erected on the north end of the pier between the locks until the signal light for the lock to be entered shows *green*.”

Line 17: *Add*:— “and a depth of 7 feet alongside.”

Page 16.—Line 33:—Note.—Pointe Claire lights were destroyed in 1945. Temporarily, a white gas buoy will be maintained about 100 feet eastward of the remains of the old pier.

After line 37 *insert*:—

“Two leading lights, *fixed green*, on Pointe Claire wharf, lead from the main channel to the wharf.”

Page 17.—Lines 19-20: *Delete* from “Two red spar buoys” to end of sentence and *substitute*:—

“A red light-buoy, 64S, showing a *flashing red* light, is moored on the northern side of the channel at the turn, 3 cables northeastward of Ile Perrot front light. Two red spar buoys and a black spar buoy mark the channel between Sherringham Park and Ste. Anne de Bellevue.”

Page 18.—*Delete* body of paragraph headed “Outer front light” and *substitute*:—

“At a height of 45 feet, a *fixed white* light, 625 feet 313° from the common back light at the bridge, is shown from a white steel skeleton tower, with white rectangular slatwork daymark, and is visible 6 miles.”

Page 19.—Line 49: *For* “a mile” *read* “2¼ miles”.

Page 20.—After line 9 *insert*:—

“Wharf.—There is a Government wharf at De Lery (Bellevue) 1.6 miles eastward of Herbert Point, with a face 60 feet long and a depth of 6 feet alongside.”

After line 20 insert:—

"The Government wharf at Ste. Jeanne, $2\frac{1}{2}$ miles westward of Windmill Point has a pier-head 81 by 34 feet, with a depth of 8 feet alongside."

Line 26: For "*red*" read "*amber*."

Page 25.—Line 41: For "*fixed white*" read "*flashing green*".

Page 26.—Line 15: For "*12 feet*" read "*10 feet*"; for "*railway wharves*" read "*Railway wharf*".

Page 27.—Line 13: For "*flashing white*" read "*flashing green*".

Page 29.—Lines 31-32: For "*fixed white*" read "*flashing red*".

Page 30.—After line 7 insert:—

"**Light.**—On the south extreme of Renshaw Island, near its western end, a *flashing white* light is shown at an elevation of 30 feet from a pole with white daymark attached."

Page 31.—After line 40 insert:—

"**Light.**—On the northwest side of St. Regis Island, one-half mile from its western end, a *flashing white* light is shown at an elevation of 30 feet, from a mast with white diamond-shaped daymark attached."

Page 32.—After line 30 insert:—

"**Light.**—On the northwest point of Pilon Island, about 2 miles below Cornwall, a *flashing red* light is shown at an elevation of 30 feet, from a mast with white diamond-shaped daymark attached."

Page 39.—Line 7: For "*A black spar buoy*" read "*A black steel buoy showing a flashing white light*".

Page 41.—Line 12: Delete from "*170 yards northward*" to end of sentence and substitute:—

"A red spar buoy 74 U, marks the edge of the 2-fathom line, $1\frac{1}{3}$ cables southwestward of Jackass Shoal."

Page 44.—Line 17: For "*fixed*" read "*flashing*".

Line 21: After "*140 U*" insert:—

"two boat type black buoys, 137 U and 143 U, showing *flashing white* lights,".

Page 45.—Line 8: Add:—"and a boat type black steel buoy showing a *fixed white* light, the latter being the most westerly of the four".

Page 47.—After line 4 *insert*:—

"A light or lights of different characters, characteristics and colour, may be shown from time to time from the lighthouse on top of the lighthouse depot at Prescott. These lights will be irregular and intermittent and for experimental purposes only."

Page 56.—Line 3: For "*fixed*" read "*flashing*".

Lines 31-32: Delete "*group flashing white light of two flashes every 5 seconds*" and *substitute*:—

"a *flashing white light every 2.5 seconds*".

Page 57.—Line 42: For "*fixed*" read "*flashing*".

Page 60.—Delete lines 26-28 and *substitute*:—

"**Deer Island.**—A red spar buoy, with band of red reflectors, is moored on the northern side of the channel, northward of Deer Island, and 4,250 feet 192° from Grenadier Island light."

Page 63.—For "*Garrett Island*" read "*Garrett Point*".

Lines 34-35.—For "*Wellesley Island*" read "*Wells Island*".

Page 64.—Delete lines 4 and 5 and *substitute*:—

"**Light.**—From a steel skeleton tower on the south side of Wood Island, a *flashing red light* is exhibited at a height of 20 feet."

Page 67.—Delete line 37 and *substitute*:—

"a *flashing white light every 2.5 seconds, visible 10 miles*."

Page 68.—Lines 27-28: Delete from "*group flashing*" to end of sentence and *substitute*:—

"a *flashing white light every 2.5 seconds*".

Page 70.—Line 51: For "*fixed*" read "*flashing*".

Page 71.—Lines 27-28: For "*Little Island*" read "*Ormiston Island*".

Line 29: *Add*:— "*Vessels pass northward of this buoy*."

Delete lines 35-37.

After line 40 *insert*:—

"**Buoys.**—A red spar buoy is moored in 18 feet of water, about 550 feet 22° from Spectacle Shoal light. A black spar buoy moored in the same depth, about 1,000 feet 50° from Spectacle Shoal light, marks the shoal which extends 250 yards north of Spectacle Rocks."

Page 72.—Line 36:—For "*fixed*" read "*flashing*".

Page 73.—After line 7 *insert*:—

"A black spar buoy is moored off the end of the reef extending from Holliday Point."

Page 74.—After line 4 *insert*:—

“Buoys.—Two spar buoys, a red and a black, indicate the channel leading to the ferry wharf.”

Line 13: *For* “a point” *read* “Beauvais Point”.

After line 17 *insert*:—

“Light.—On the south side of Wolfe Island, about $3\frac{1}{2}$ miles west of Beauvais Point, a *flashing red* light is shown at an elevation of 15 feet from a red steel structure.”

Page 75.—Line 10: *For* “45” *read* “60”.

After line 13 *insert*:—

“Light.—On the south side of Wolfe Island, about $1\frac{3}{4}$ miles southwestward of Alexandria Point, a *flashing white* light is shown at an elevation of 45 feet from a pole.”

Page 77.—Line 37: *Add*:—“The causeway is closed to navigation during the following hours.— 12 noon to 1:30 P.M.; 5:30 P.M. to 7:30 P.M.; 2 A.M. to 3:30 A.M.”

Page 78.—Line 42: *For* “fixed white” *read* “fixed green”.

Page 79.—*Add* to paragraph headed “Intake pipe”:—

“A red steel buoy showing a *flashing red* light marks the outer end of a second intake pipe, which extends 1,000 feet 175° from the southwest corner of the old Frontenac Coal and Wood Company’s wharf. A white spar buoy with a band of red reflectors is moored immediately east of the intake pipe, and midway between the light-buoy and the wharf.”

Page 80.—After line 44 *insert*:—

“Buoy.—A red steel buoy showing a *flashing red* light is moored in 85 feet of water, about 3,000 feet 204° from Portsmouth front leading light. It marks the extremity of an intake pipe at this point.”

From the head of the Cornwall Canal to the foot of the Farran Point Canal the distance on the River St. Lawrence is 4¾ miles.

Cornwall Canal—Mileage and General Data

Mileage	Structure, Locality, etc.	Locks				
		No.	Length Between Hollow Quoins	Minimum Width	Depth on Sill	Lift
			ft. in.	ft. in.	ft. in.	ft.
0-00	East entrance—Cornwall					
0-01	Cornwall lock.....	15	270 0	45 0	14 0*	12-7
0-25	By-pass					
0-32	Lock.....	17	270 0	43 8	14 0	13-3
0-82	Bridge 1—Highway swing					
1-55	Culvert					
1-65	Lock.....	18	270 0	45 0	14 0	8-0
1-84	Bridge 2—N.Y.C. & H.R.R.R. and highway swing					
3-16	Lock.....	19	270 0	45 0	14 0	6-0
4-06	Culvert					
4-76	Lock.....	20	270 0	45 0	14 0	8-0
5-04	Guard gate					
5-99	Bridge 3—Highway swing					
10-38	Guard lock.....	21	270 0	45 0	14 0*	0-00
11-00	West entrance—Dickinson's Landing					
	Total lift.....					48-0

* Minimum depth.

WILLIAMSBURG CANALS

The Farran Point, Rapide Plat (or Morrisburg) and Galop Canals are collectively known as the Williamsburg Canals.

5

FARRAN POINT CANAL

Length of canal.....	1-28 mile	
Number of locks.....	1	
New lock.....	800 feet by 50 feet	
Total rise of lockage.....	4 feet 2½ inches	10
Depth of water on sills (normally)	16 feet	
Breadth of canal at bottom.....	80 feet	
Breadth of canal at water surface.	154 feet	
Minimum overhead clearance....	No restrictions	

This canal enables vessels ascending the river to avoid Farran Point Rapids, 15 passing a full tow at one lockage. Descending vessels run the rapids with ease and safety.

The canal is lighted by electricity.

From the head of Farran Point Canal to the foot of Rapide Plat Canal there is a navigable stretch of 9½ miles.

20

RAPIDE PLAT (OR MORRISBURG) CANAL

Length of canal.....	3-89 miles	
Number of locks.....	2	
Dimensions of locks—		
Lock No. 23.....	285 feet by 45 feet	25
Guard lock No. 24.....	270 feet by 45 feet	

	Total rise or lockage.....	11 feet 7 $\frac{1}{4}$ inches
	Depth of water on sills (normally)	14 feet
	Breadth of canal at bottom.....	80 feet
	Breadth of canal at water surface.	154 feet
5	Minimum overhead clearance.....	No restrictions

The canal was constructed to enable vessels ascending the river to pass the Rapide Plat. Descending vessels run the rapids safely, except at extreme low stage of water in the river, when down-bound vessels of full canal draught must use the canal.

- 10 The canal is lighted by electricity.

From the head of the Rapide Plat Canal to Iroquois, at the foot of the Galop Canal, the St. Lawrence is navigable for 4 miles.

GALOP CANAL

	Length of canal.....	7.36 miles
15	Number of locks.....	3
	Dimensions of locks—	
	Lift-lock at foot of canal.....	800 feet by 50 feet
	Guard lock at head of canal.....	270 feet by 45 feet
	Lift-lock to pass vessels around Galop	
20	Rapids only.....	303 feet by 45 feet
	Total rise or lockage.....	15 feet 5 $\frac{1}{2}$ inches
	Depth of water on sills (normally).....	14 feet
	Breadth of canal at bottom.....	80 feet
	Breadth of canal at surface of water.....	144 feet
25	Breadth between walls in Cardinal cut.....	88 feet
	Minimum overhead clearance.....	No restrictions

This canal enables vessels to overcome the rapids at Pointe aux Iroquois, Point Cardinal and the Galop.

Both entrance locks and the canal, for a distance of 1.7 miles from lower 30 entrance, are lighted by electricity.

From the head of the Galop Canal to the entrance to the Welland Ship Canal the distance is 229 miles.

Williamsburg Canals—Mileage and General Data

Mileage	Structure, Locality, etc.	Locks				
		No.	Length Between Hollow Quoins	Minimum Width	Depth on Sill	Lift
	FARRAN POINT CANAL		ft. in.	ft. in.	ft. in.	ft.
0-00	East entrance—Farran Point Village	22	800 0	50 0	16 0 (lower sill)	4.21
0-11	Farran Point lock.....					
1-28	West entrance					
	Total lift.....					4.21

Williamsburg Canals—Mileage and General Data—*Concluded*

Mileage	Structure, Locality, etc.	Locks				
		No.	Length Between Hollow Quoins	Minimum Width	Depth on Sill	Lift
			ft. in.	ft. in.	ft. in.	ft.
	RAPIDE PLAT CANAL					
0-00	East entrance—Farlinger's Bay, Morrisburg				*	
0-19	Morrisburg lock.....	23	285 0	45 0	14 6 (lower sill)	11-60
1-59	Stata's Bay					
1-76	Mariatown				†	
2-80	Heagles Bay					
3-67	Guard lock.....	24	270 0	45 0	14 0	
3-89	West entrance—Flagg Bay					
	Total lift.....					11-60
	GALOP CANAL					
0-00	East entrance—Iroquois Village				*	
0-21	Iroquois lock.....	25	800 0	50 0	16 6 (lower sill)	15-46
0-34	Bridge 4—Highway swing					
5-25	Bridge 5—Canadian National Rys.—Swing					
5-83	Gates Bay	27	270 0	45 0	14 0	
6-42	Guard lock.....	28	303 0	45 0	14 0	(6-0)
6-42	River lock.....					
7-36	West entrance					
	Total lift.....					15-46

* Minimum depth.

† Has been as low as 13 feet 1 inch (November, 1925).

† Has been as low as 12 feet 9 inches (November, 1933).

‡ Has been as low as 12 feet 6 inches (November, 1933).

MONTREAL, OTTAWA AND KINGSTON ROUTE

This route extends from the Harbour of Montreal, passing through the Lachine Canal to Lake St. Louis and thence up the Ottawa River *via* the Ste. Anne lock and the Carillon and Grenville Canals to Ottawa; thence by the Rideau Canal, Rideau River and a series of small lakes and other water courses and channels to Kingston on Lake Ontario, a total distance of 246.24 miles.

The total lockage between the Harbour of Montreal and that of Kingston is 545 feet (385 feet rise and 160 feet fall) and the number of locks is 60.

The following table exhibits the intermediate distances from Montreal Harbour:—

Sections of Navigation	Inter- mediate Distance	Total Distance from Montreal
	Miles	Miles
Lachine Canal.....	8.74
From Lachine to Ste. Anne lock.....	13.50	22.24
Ste. Anne lock and piers.....	0.12	22.36
Ste. Anne lock to Carillon Canal.....	27.00	49.36
Carillon Canal.....	0.94	50.30
From Carillon Canal to Grenville Canal.....	6.25	56.55
Grenville Canal.....	5.94	62.49
From Grenville Canal to entrance of Rideau navigation.....	56.00	118.49
Rideau navigation ending at Kingston.....	126.25	244.74
“ Tay branch, from Rideau Lake to Perth.....	6.50	193.44

STE. ANNE LOCK

	Length of canal.....	0.12 miles
	Number of locks.....	1
	Dimensions of lock.....	200 feet by 45 feet
5	Total rise or lockage.....	.3 feet
	Depth on sills (normally).....	9 feet
	*Overhead clearance.....	41 feet 5 inches (C.N.R. bridge)

This work, with guide piers above and below, surmounts the Ste. Anne 10 Rapids between Ile Perrot and the head of the Island of Montreal, at the outlet of that portion of the Ottawa River which forms the Lake of Two Mountains, 23.5 miles from Montreal Harbour. The lock is electrically operated and lighted.

From the Ste. Anne lock to the foot of the Carillon Canal is a navigable 15 stretch of 27 miles through the Lake of Two Mountains and the Ottawa River.

CARILLON CANAL

	Length of canal.....	0.94 miles
	Number of locks.....	2
	Dimensions of locks.....	200 feet by 45 feet
20	Total rise or lockage.....	14 feet
	Depth of water on sills.....	9 feet †
	Breadth of canal at bottom.....	100 feet
	Breadth of canal at water surface.....	110 feet
	Minimum overhead clearance.....	45 feet
25	This canal overcomes the Carillon Rapids.	

By the construction of the Carillon dam across the Ottawa River the water at that point is raised 9 feet, enabling the river above to be used for navigation. From the head of the Carillon Canal to the Grenville Canal the distance is 6.25 miles.

30 GRENVILLE CANAL

	Length of canal.....	5.94 miles
	Number of locks.....	5
	Dimensions of locks.....	200 feet by 45 feet
	Total rise or lockage.....	43 feet
35	Depth of water on sills.....	9 feet 6 inches†
	Breadth of canal at bottom.....	45 to 50 feet
	Breadth of canal at water surface.....	50 to 80 “
	Minimum overhead clearance.....	42 feet (C.N.R. bridge)

* At extreme high water in Lake St. Louis, this clearance is reduced to 33 feet 9 inches.

† The minimum depth provided for vessels passing through both the Carillon and Grenville Canals is 9 feet except during periods of very low water.

This canal, by which the Long Sault Rapids are avoided, is about 56 miles 40 below the City of Ottawa, up to which point the Ottawa River affords unimpeded navigation.

Carillon and Grenville Canals—Mileage and General Data

Mileage	Structure, Locality, etc.	Locks				
		No.	Length Between Hollow Quoins	Minimum Width	Depth on Sill	Lift
0-00	Lower entrance to Carillon Canal		ft. in.	ft. in.	ft. in.	ft.
0-09	Lock.....	1	202 3	45 0	12 0*	10-50
0-76	"	2	200 9	45 0	Variable 9 6†	3-50
0-94	Upper entrance to Carillon Canal.				Variable	
	Total lift.....					14-00

Between the upper entrance to the Carillon Canal and lower entrance to the Grenville Canal there is a distance of about 6½ miles.

0-00	Lower entrance to Grenville Canal					
0-11	Lock.....	3	199 9	45 0	13 0‡	13-20
					Variable	
0-27	Waste weir					
0-38	Lock.....	4	200 3	45 0	9 6	16-70
0-53	Waste weir					
1-27	Lock.....	5	200 0	45 0	9 6	6-60
1-27	Swing bridge					
1-64	Waste weir					
4-20	Lock.....	6	200 6	45 0	9 6	4-00
4-58	C.N.R. high level bridge					
4-92	Highway high level bridge					
5-58	Swing bridge—Bay Street, Grenville					
5-61	Lock.....	7	200 3	45 0	9 6§	2-50
					Variable	
5-94	Upper entrance to Grenville Canal					
	Total lift.....					43-00

* The lowest depth of water recorded for this sill is 10-00, the highest 22-75

† " " " 8-17 " 23-25

‡ " " " 9-25 " 28-50

§ " " " 8-58 " 24-92

RIDEAU NAVIGATION

The Rideau Canal establishes a navigable waterway between the Ottawa River at Ottawa and the easterly end of Lake Ontario at Kingston, passing over the summit which lies between the Ottawa Valley and that of the St. Lawrence. The general route of the canal may thus be described:—

5

By a series of eight locks in flight it first ascends the steep escarpment from the Ottawa River and, proceeding across the city by an artificial cutting about five miles in length, enters the Rideau River at the Hogsback locks. The course of this river is then followed to Smiths Falls, distant about sixty-one miles from Ottawa, various dams and locks overcoming the differences in level encountered 10 along the route. From this point, *via* Poonamalie lock, entrance is made into the first of two large expanses of water known respectively as the lower and upper Rideau Lakes. At the upper lake the summit level of the canal, about 290 feet above that of the Ottawa River, is reached. From this lake, communication is made with Newboro Lake, another large body of water. The route then passes 15 in succession through Clear Lake, Indian Lake, Opinicon Lake, Sand Lake, Whitefish Lake and Cranberry Lake. From Cranberry Lake it proceeds for about five miles through a narrow channel and thence through two large expanses of drowned land to Kingston Mills, whence, by a series of four locks, it descends to the Cataraqui River. This river is then followed for a distance of six miles 20 to the harbour of the City of Kingston.

The Tay branch of the canal affords communication *via* the Tay River between Beveridge Bay, about ten miles beyond Smiths Falls on the lower Rideau Lake, and the Town of Perth.

From the summit level of the canal the descending reaches on both the 5 Ottawa and St. Lawrence Valley slopes are supplied also by reserve waters tributary to them. The water supply of the entire canal may be summarized as follows:—

1. The summit level, supplied by the Wolf Lake system discharging into the upper Rideau Lake.
 - 10 2. The northeasterly descending level to Ottawa, supplied by the Tay River system discharging into the lower Rideau Lake.
 3. The southwesterly descending level to Kingston, supplied by the Mud or Newboro Lake system discharging into Opinicon Lake and further supplemented by the flow from Loughborough Lake.
- | | | |
|----|---|----------------------------------|
| 15 | Length of navigation..... | 126·25 miles |
| | Number of locks from Ottawa to Kingston..... | { 33 ascending
14 descending |
| | Total lockage, at low water..... | { 275 feet rise
161 feet fall |
| 20 | Dimensions of locks..... | 134 feet by 33 feet |
| | Depth of water on sills (normally)..... | 5 feet |
| | Navigation depth through the several reaches.... | 5 feet |
| | Breadth of canal reaches at bottom..... | 60 feet |
| | Breadth of canal reaches at surface of water..... | 80 feet |
| 25 | Minimum overhead clearance..... | 26 feet 6 inches |

TAY BRANCH

	Length of canal.....	6·5 miles
	Number of locks.....	2
	Dimensions of locks.....	134 feet by 33 feet
30	Total rise or lockage.....	26 feet
	Depth of water on sills (normally).....	5 feet
	Length of dam.....	200 feet
	Breadth of canal at bottom.....	{ 40 feet in rock 60 feet in clay
35	Breadth of canal at surface of water.....	80 feet

Rideau Canal—Mileage and General Data

Miles from Ottawa	Structure, Locality, etc.	Over-head Clearance	Locks					Canal Prism, Miles
			No.	Length Between Hollow Quoins	Minimum Width	Depth on Sill	Average Lift	
(Ottawa River—Normal navigation level 128.98 above M.S.L.)								
		ft. in.		ft. in.	ft. in.	ft. in.	feet	
0.00	Ottawa River—Ottawa.....		1 2 3 4 5 6 7 8					
			Flight locks					
				134 0	33 0	6 6	82.00	*
0.24	Plaza Bridge—Ottawa.....	26 6						
0.55	Laurier Ave. bridge—Steel arch...	27 3						4.15
1.50	Can. Nat. Rys.—Swing bridge.....							
1.55	Bridge 1—Vert. lift—Pretoria Ave....	29 6						
2.75	Concrete arch—Bank Street.....	27 0						
3.33	Bridge 2—Bronson Ave.—Swing							
3.65	Can. Pacific Ry.—Swing bridge							
4.15	Hartwell Locks.....		9 10		134 0	33 0	5 0	22.00
			Flight					
								1.05
5.20	Hogsback locks.....		11		134 0	33 0	5 0	13.50
5.22	Bridge over lock 12—Swing		12					
5.22	Entrance to Rideau River...		Flight					
7.40	Can. Nat. Rys. high-level bridge...	31 0						
9.50	Black Rapids lock.....		13		134 0	33 0	5 0	10.00
								0.13
14.75	Long Island locks.....		14 15 16		134 0	33 0	5 0	27.00
			Flight					
14.85	Bridge 5—Swing—Across upper lock							
16.55	Bridge 6—Swing—Manotick							0.13
23.85	Bridge 7—Swing—Kars							
33.11	Bridge 8—Beckett's Ldg.....	27 0						
40.50	Burritt's Rapids.....		17		134 0	33 0	5 0	10.50
41.00	Bridge 9—Swing.							
43.60	Nicholson locks.....		18		134 0	33 0	5 0	6.75
	"							0.50
	"		19		134 0	33 0	5 0	8.33
44.10	Bridge 10—Swing over lock 19							
44.85	Clowes lock.....		20		134 0	33 0	5 0	10.50
46.50	Can. Pac. Ry.—High-level bridge.	40 0						0.05
46.75	Merrickville locks.....		21		134 0	33 0	5 0	8.25
	"		22		134 0	33 0	5 0	10.00
	"		23		134 0	33 0	5 0	6.75
46.80	Bridge 11—Swing over lock 23.....							
55.00	Kilmarnock lock.....		24		134 0	33 0	5 0	4.75
55.00	Bridge 13—Swing over lock							0.15
59.50	Edmond's lock.....		25		134 0	33 0	5 0	10.83
60.49	Can. Pac. Ry.—High-level bridge.	30 0						
60.50	Old Sly's locks.....		26 27		134 0	33 0	5 0	15.50
			Flight					
60.55	Bridge 15—Swing over lock 27							
61.50	Smiths Falls locks.....		28 29 30		134 0	33 0	5 0	25.25
	"		Flight					
61.55	Bridge 17—Beckwith St.—Swing over entrance lock 30							
61.80	Bridge 19—Abbot Street—Swing over canal prism							
61.80	Smiths Falls lock.....		31		134 0	33 0	5 0	8.50
61.85	Can. Nat. Rys.—Bascule lift							0.17
64.25	Poonamalie lock.....		32		134 0	33 0	5 0	7.75
64.93	Entrance to Lower Rideau Lake							1.25
								9.64

* Highest recorded water on lower sill of lock 1=29 feet 6 inches.
Lowest recorded water on lower sill of lock 1=4 feet 7 inches

Rideau Canal—Mileage and General Data—*Concluded*

Miles from Ottawa	Structure, Locality, etc.	Over- head Clear- ance	LOCKS					Canal Prism
			No.	Length Between Hollow Quoins	Mini- mum Width	Depth on Sill	Average Lift	
		ft. in.		ft. in.	ft. in.	ft. in.	ft. in.	Miles
68.45	Diversion to Tay Branch							
70.35	Bridge 26—Swing—Rideau Ferry							
83.45	The Narrows.....		35	134 0	33 0	5 0	4.0	0.06
83.51	Entrance to Upper Rideau Lake (Summit level, 404.23 above M.S.L.)							
87.20	Can. Nat. Ry. high-level bridge...	34 0						
	Bridge 29—High-level highway....	27 5						
87.75	Newboro lock.....		36	134 0	33 0	5 0	9.0	1.25
91.75	Can. Nat. Ry. high-level bridge...	34 0						
92.00	Chaffey's lock.....		37	134 0	33 0	5 0	12.0	0.13
92.00	Bridge 30—Swing over lock 37							
92.45	Davis' lock.....		38	134 0	33 0	5 0	9.0	0.06
97.25	Jones's Falls locks.....		39				15.0	
	".....		40	134 0	33 0	5 0		
	".....		41	134 0	33 0	5 0	45.0	
97.40	".....		42	134 0	33 0	5 0		
97.27	Bridge 33—Swing over lock 40							
103.65	Bridge 36—Swing over Cranberry Lake							
108.25	Upper Brewers Mills locks.....		43	134 0	33 0	5 0		
	".....		44	134 0	33 0	5 0	17.42	1.75
110.00	Bridge 37—Swing over lock 44							
	Lower Brewers Mills or Washburn lock.....		45	134 0	33 0	5 0	13.0	4.25
120.25	Bridge 39—Swing over lock 45							
	Kingston Mills locks.....		46	134 0	33 0	5 0		
	".....		47	134 0	33 0	5 0		
	".....		48	134 0	33 0	5 0	45.0	0.25
	".....		49	134 0	33 0	5 0		†
120.30	Bridge 41—Swing over lock 46							
126.25	Can. Nat. Ry. high-level bridge...	30 0						
	Kingston—Bascule bridge—Cata- raqui bridge							
(Lake Ontario—Mean level, 246.0 above M.S.L.; Standard low water, 243.0 above M.S.L.)								17.39

† Highest recorded water on lower sill of lock 49 = 11 feet 2 inches.

Lowest recorded water on lower sill of lock 49 = 5 feet 8 inches.

Rideau Canal—Tay Branch—Mileage and General Data

Mileage from Ottawa	Structure, Locality, etc.	LOCKS					Canal Prism
		No.	Length Between Hollow Quoins	Mini- mum Width	Depth on Sill	Lift	
			ft. in.	ft. in.	ft. in.	feet	Miles
69.15	Canal entrance—Beveridge Bay—Rideau Lake		134 0	33 0	5 0		
69.35	Lock.....	33				26.0	
69.37	".....	34	134 0	33 0	5 0		
69.40	Bridge 21—Swing across canal prism						
75.20	" 22—Swing—Craig Street—Perth						
75.45	" 23—Swing—Beckwith Street—Perth						
75.55	" 24—Swing—Drummond Street—Perth						
75.65	" 25—Swing—Gore Street—Perth						
	(Total length Tay Branch, 6.50 miles)						3.50

CANAL RULES AND REGULATIONS

For the assistance of mariners and shipping navigating the canalized portions of the St. Lawrence and Ottawa Rivers, the following paragraphs, as numbered, and concerning generally those canals dealt with in the "St. Lawrence River Pilot", have been extracted from "Rules and Regulations for the Guidance and Observance of those using the Canals of the Dominion of Canada", published by the Department of Transport. 5

(For further details, penalties for non-observance, etc., the above-mentioned publication should be consulted.)

Control

10

1. (1) The Canal Rules and Regulations are made under the authority of Sections 25 and 26 of the Department of Transport Act, being Chapter 171, Revised Statutes of Canada, 1927, as amended by Chapter 34 of the Statutes of 1936.

Customs Clearance Papers

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2. Customs clearance papers of vessels must be produced and shown to any Superintendent or lockmaster when required or passage of canal may be refused.

Time When Canals are Open

3. The canals will be open for navigation throughout each day and night, 20 including Sundays, during the season of navigation, with the following exceptions:—

(a) The season of navigation on canals other than those constituting the main route may start later and end earlier than on those constituting the main route. Information regarding the duration of the season of navigation on any 25 canal for any year may be obtained from the Superintending Engineer of such canal.

(b) The Carillon, Grenville, Ste. Anne, Chambly, St. Ours, and Rideau Canals have restricted Sunday hours, and announcement will be made each year at the time of opening of navigation of the Sunday opening rules as apply- 30 ing to that navigation season for these canals.

(d) On the Rideau Canal, the railway movable bridge at Smiths Falls is operated daily from 6 a.m. to 10 p.m. or during such other hours as may be determined from time to time by the General Superintendent.

Use of Canals to be at Owner's Risk

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4. All vessels or rafts, when plying on or passing through the canals, shall do so entirely at the risk of their respective owners; and neither His Majesty nor any agent of His Majesty shall on any account be held liable or responsible for any compensation to the owner or owners of any such vessel or raft should it be prevented from using any canal, or part thereof, or be detained or delayed 40 while passing through the same, on account of an accident, howsoever caused, that may occur to the works or structures forming part of any of the said canals, or during any repairs to the same, or for any other reason.

Let Pass Requirements

6. No vessel or raft shall pass through any canal or part thereof without 45 a proper official "Let Pass" or (in the case of a passage of lock only on a trip) a proper official "Ship's Report" used as a "Let Pass", which must be obtained at the first or nearest canal statistical office.

The regular "Ship's Report" and "Let Pass" will be used for all vessels except for pleasure craft of forty (40') feet or less in length. Owners of pleasure craft of forty (40') feet or less in length, such as motor-boats, yachts, etc., desiring to make use of the canals will receive, on application to the local statistical officer or, on the Trent and Rideau Canals, any lockmaster, a special "Season Let Pass." These special let passes will be valid only for the season and must be shown to the statistical officer or lockmaster when passing through any lock on these canals.

Draught of Water

10 **10.** (1) Every vessel, drawing five feet or over, navigating any canal shall be correctly and distinctly marked and gauged at the bow and stern so as to show her exact draught fore and aft and no vessel without such gauge marks shall enter any canal.

(2) Whenever required any vessel must produce a certificate, duly sworn to, 15 from the last dry dock the vessel was in, that her draught marks are correct.

Barges in Tow

14. (1) Barges or scows having no steering apparatus, when towed by other means than tugs, shall be towed so that the distance between their source of traction and the point where the tow line is snubbed to the barge or scow 20 shall be at least one hundred feet.

(2) Except with the special permission, in writing, of the General Superintendent, or the Superintending Engineer, no steamer or tug shall tow more than one barge at a time on the canals of the St. Lawrence River except upbound between Locks 20 and 21 on the Cornwall Canal, and upbound on the Williams- 25 burg Canals, nor shall any barges be towed abreast on any canal except with such permission.

(3) When so required by the General Superintendent, or the Superintending Engineer, two tugs must be provided for towing a barge through the canals of the St. Lawrence River and, if not so provided on instruction, passage 30 of any of these canals by such barge may be prohibited.

(4) The owner of any vessel towing or pushing a barge, scow or other vessel shall be liable for any injury or damage caused by such barge or other vessel.

Speed of Vessels

15. Every vessel, after entering a canal, shall proceed, in the opinion of 35 the General Superintendent, at a reasonable speed so as not to cause undue delay to vessels navigating in the same direction but no vessel shall pass through any canal or harbour at a greater speed than that fixed by the General Superintendent, or the Superintending Engineer,—which speed, when not otherwise specified, shall be taken as not exceeding six miles an hour. No vessel shall 40 proceed in any canal at a speed greater, in the opinion of the General Superintendent, or the Superintending Engineer or the Superintendent, than is reasonable and proper having regard to the traffic and use of such canal or so as to endanger the life or limb of any person or the safety of any property.

Lights on Vessels

45 **16.** Every vessel or raft navigating any of the canals, or any navigable channel between any of the canals, or lying moored in any canal or such navigable channel, shall, during the night, comply with the current regulations of the Department respecting lights. (No vessel shall use a searchlight for ordinary navigating purposes in canal water. If it becomes necessary to use a search-

light in a case of emergency, then the rays of the searchlight shall not be directed towards the pilot house or navigating bridge of another vessel nor towards the operating house of a canal bridge, or the control room of a canal lock, nor along the tops of lock walls on which canal employees are on duty.) Vessels when lying at a pier awaiting their turn to enter a lock shall be considered as still 5 under way and their lights are to be regulated accordingly.

Lights on Locks and Movable Bridges

17. (1) When at night a lock is ready for the admission of a vessel, a red light will be exposed on the mitre of the gates farthest away from the approaching vessel; and no vessel shall attempt to enter the lock until such light is shown. 10

(2) Fixed lights will be shown at night on all movable bridges, red when closed to navigation, and green when open, and no vessel shall attempt to pass unless such green light is so shown.

Meeting and Passing of Vessels

18. (1) In all cases of vessels meeting in a canal, their passing of each 15 other shall be governed by the then existing rules and regulations of the Department respecting the meeting and passing of vessels; each vessel shall always pass on the port side of the other, except in the locations as follows:—

(a) In South Basin No. 1 of the Lachine Canal, each vessel, unless both be tugs or other small boats, shall pass on the starboard side of the 20 other;

(2) When two vessels are approaching from opposite directions a swing bridge which does not provide separate channels for up and down traffic and which curtails the normal width of the navigation channel, the downbound vessel shall have the right of way, the upbound vessel holding back so that the 25 vessels will pass each other at least 300 feet below the bridge.

(3) When two vessels, either one of which exceeds 100 feet in length, are approaching a bend in a canal from opposite directions, the downbound vessel shall have the right of way and the upbound vessel shall check down so as to avoid meeting in the bend. 30

Overtaking and Passing of Vessels

19. (1) When one vessel is overtaking another, and the master or person in charge of a vessel which is astern shall desire to pass on the right or starboard side of the vessel ahead, he shall give one short blast of the whistle, as a signal of such desire and intention, or, if he shall desire to pass on the left or 35 port side of the vessel ahead, he shall give two short blasts of the whistle as a signal of such desire and intention and the master or person in charge of the vessel ahead shall answer by the same signals; or if he does not think it safe for the vessel astern to attempt to pass at that point, he shall immediately signify the same by giving five or more short and rapid blasts of the whistle, 40 and under no circumstances shall the vessel astern attempt to pass the vessel ahead until such time as they have reached a point where it can be safely done, when said vessel ahead shall signify her willingness by blowing the proper signals.

(2) If the vessels are within 300 yards of a lock or swing bridge towards 45 which the vessels are progressing the faster vessel shall not attempt to pass.

Passing Moored Vessels

20. Any vessel passing a vessel or vessels moored to a wharf, pier or the bank of any canal and any vessel passing construction and maintenance equipment working in a canal shall proceed at dead slow engine speed while so passing.

5

Precedence at Railway Bridges

21. Precedence at railway movable bridges shall, at all times, be given to canal traffic, but no unreasonable delay shall be caused by any vessel to railway traffic; the General Superintendent, or the Superintending Engineer or the Superintendent, shall be the judge as to the reasonableness of the delay.

10 If the signal for the bridge is given by any approaching train while a vessel is between a quarter of a mile and a half mile distant from the bridge, the vessel must slow down, stop if necessary, and await the passage of the train.

Signal of Approach

22. A steam whistle, bell or horn shall be sounded at least half a mile before a vessel reaches any lock or movable bridge as an approach signal from the vessel; provided, however, that such signal shall be given to such extent only as, in the opinion of the General Superintendent, or the Superintending Engineer or the Superintendent, is necessary to give the officer in charge of such lock or bridge timely warning to make preparations to receive the vessel at the lock or to allow it to pass through the bridge opening.

Vessels Approaching Lock or Bridge

23. (1) It shall be the duty of the master or person in charge of any vessel on approaching any lock or bridge to ascertain for himself, by careful observation, whether the lock or bridge is prepared to allow the vessel to enter or pass, and to be careful to stop the speed of any such vessel in sufficient time to avoid a collision with the lock or its gates, or with the bridge or other canal works.

(2) All vessels approaching a lock, while any other vessel is in or about to enter the same, shall be stopped and made fast to the posts or other device placed for that purpose and shall be kept so tied up until receiving direction from the officer in charge to proceed.

Vessels Waiting at Locks

24. (1) When several vessels are awaiting to enter any lock or canal, they shall lie in single tier, and at a distance of not less than 300 feet from such lock or canal, except where local conditions may, in the judgment of the General Superintendent, or the Superintending Engineer or the Superintendent, otherwise require; and each vessel for the purpose of passing through shall advance in the order in which it arrived at the lock or canal except;

- (a) in the case of vessels to which priority of passage is granted by these regulations;
- 40 (b) in the case of a vessel being small enough to lock with a preceding vessel, such vessel may be instructed to advance out of its regular turn to lock with such preceding vessel;
- (c) in the case of one or more single vessels and several barges of one tow waiting for passage, when such order of passage as may be determined by the General Superintendent or the Superintending Engineer or the Superintendent shall govern;
- 45 (d) under special circumstances, in the opinion of the General Superintendent or the Superintending Engineer or the Superintendent, when such other order of passage as shall be determined by such officer shall govern.
- 50

Priority of Passage Through Locks

25. (1) Except in special circumstances or emergency as to which the General Superintendent or the Superintending Engineer or the Superintendent shall be the sole judge, the following shall be the order of precedence with regard to passage through the canals or locks:—

5

- (a) Any Canadian Government vessel.
- (b) Vessels built and navigated for the express purpose of the passenger traffic, running on schedule time; also excursion steamers and market boats.
- (c) Subject to specific authority granted in each case by the General Superintendent vessels built and navigated for the express purpose of transporting package freight, running on schedule time and taking on or delivering such freight at local ports en route and of whose cargo on each upbound and downbound trip at least seventy-five (75) per cent in tonnage is, in the opinion of the Superintending Engineer, package freight, provided, however, that the precedence herein granted will be effective on the Welland Ship Canal for upbound vessels through the lower entrance lock only and for downbound vessels through the upper entrance lock only and on the other canals only at such locks and only in such direction at each lock as may be determined from time to time by the General Superintendent.
- (d) All other vessels.

(2) A lock shall be held for the accommodation of any vessel approaching and being within such distance of such lock that she would be seriously or unduly delayed if any other vessel lying in the tier and over which she has precedence, under the provisions of paragraph (1) of this regulation, were locked before her.

Care in Entering and Leaving Locks

26. (1) No vessel shall attempt to enter or leave a lock until the gates are fully opened. The engines must be stopped while the propeller wheel is passing over the mitre sills.

(2) The rate of speed of any vessel in entering a lock, when the bow of the vessel has reached the open gates, must be such that the vessel can be controlled by her lines alone without depending on the propeller wheel, and the engines must be stopped when the bow of the vessel has reached the middle of the lock between the upper and lower gates, the remaining distance to be travelled by the vessel to be effected and the vessel controlled by means of lines attached to winches installed on the vessel's deck.

Vessel Men to Assist in Passing Vessels

27. Whenever any vessel is passing through a lock or bridge, the crew shall, whenever and in such numbers as required by the officer in charge of such lock or bridge, be assigned to assist in working the lock or bridge to pass the said vessel through it, during which time the vessel men so assigned shall be subject to, act exclusively under, and comply with the instructions given them by the said officer. For any violation of this regulation the owner of the vessel concerned shall be liable to a penalty of not less than Two dollars and not exceeding Forty dollars.

Vessel Lines Required

28. (1) Every vessel of two hundred registered gross tons and under, navigating the canals, shall be provided with at least two good and sufficient lines or hawsers, one at the bow and one at the quarter and every vessel of

- more than two hundred registered gross tons shall be provided with at least four good and sufficient lines or hawsers, two leading astern, one leading ahead and one abreast line. When locking, such lines shall be made fast to the snubbing posts on the bank of the canal and lock; the two lines leading astern of a vessel of more than two hundred registered gross tons, pulling evenly, shall be made fast to separate snubbing posts; each line shall be attended by one of the boat's crew, to check the speed of the vessel while entering the lock, to prevent it from striking against the gates or other parts of the lock, and to keep it in proper position while the lock is being filled or emptied. For any violation of this regulation the owner of the offending vessel shall be liable to a penalty of not less than Twenty-five dollars and not exceeding Two Hundred dollars, and the vessel shall not be permitted to pass if, in the opinion of the General Superintendent or the Superintending Engineer or the Superintendent, or the officer in charge, the lines are considered not good or insufficient.
- (2) Some slight variations as to relative position in placing of lines exist on the main canals such as the St. Lawrence River Canals. In each case the instructions of the lockmasters are to be followed.

Working Off a Lee Bank

29. No vessel when blown or otherwise held on a lee bank in a canal shall attempt to work herself off with her engine and wheel but shall run lines to the opposite side of the canal and heave out into the channel with her capstan.

Mooring and Fastening

30. (1) No vessel shall, whilst in any reach, basin, entrance or other artificial work of any canal, be fastened or moored in such manner as to obstruct navigation.

- (2) An order given by the General Superintendent or the Superintending Engineer or the Superintendent with regard to the position, mooring, fastening or removal of any vessel in a canal, including its basins and approaches, or with regard to the accommodation to be given by the master or person in charge of such vessel to the master or person in charge of another vessel shall be immediately complied with and obeyed. In the event of any such order not being complied with or obeyed within such period of time as is deemed reasonable by the General Superintendent or the Superintending Engineer or the Superintendent, the General Superintendent, or the Superintending Engineer or the Superintendent may cast off or cut away the hawsers or other fastenings of such vessel or cut away any ring or post to which such hawsers or other fastenings may be attached, and the General Superintendent or the Superintending Engineer or the Superintendent may take possession of such vessel and remove it to such point as he may see fit and he shall have the power of employing such number of men as he deems reasonable for that purpose, all at the expense of the owner of such vessel, and the owner of such vessel shall be liable for, and shall pay, all damages caused by or incidental to and costs incurred on account of any action taken by the General Superintendent or the Superintending Engineer or the Superintendent under the provisions of this regulation and in addition thereto the owner of such vessel shall be liable to a penalty of not less than Five Dollars and not exceeding One Hundred Dollars.

Tying to Electric Transmission, Light, Telephone or Telegraph Poles

31. No vessel or raft shall, under any circumstances, place a line of any nature on any electric transmission, light, telephone or telegraph pole or iron railing situated on canal property. For any violation of this regulation the owner of the offending vessel or raft shall be liable to a penalty not exceeding One Hundred dollars for each such offence.

Berths for Vessels

32. (1) Berths for all vessels or rafts, when loading, unloading or stopping at any basin, harbour or landing place, or approach in or to any canal, will, whenever necessary, be assigned by the General Superintendent or the Superintending Engineer or the Superintendent. 5

(2) Such officer shall have power to change such berths from time to time as he may see fit.

(3) If the wharves are full, such vessels or rafts shall lie where indicated by such officer until a berth has been so assigned.

Loading or Unloading Otherwise Than at a Wharf

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35. No vessel shall take on or discharge passengers or goods at any place other than a regular wharf, as determined by the Superintending Engineer, without the express permission, in writing, of the General Superintendent or the Superintending Engineer.

Dropping Anchor

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48. No anchor shall be dropped from any vessel in any reach, basin, entrance or other artificial work of any canal unless an emergency exists. The action of dropping an anchor shall be reported to the Superintending Engineer or the Superintendent immediately and the owner of the vessel shall be responsible for all damages, repairs or salvage caused or necessitated by such action. 20

Blowing Off Tubes

49. No vessel shall blow off boiler tubes in any canal or harbour. For any violation of this regulation the owner of the offending vessel shall be liable to a penalty of not less than Five dollars and not exceeding One Hundred dollars. 25

Refuse

50. (1) No person shall throw, dump or deposit, or cause to be thrown, dumped or deposited any ordure, refuse, filth, garbage, dead animal, dirt, ashes, putrid substance of any kind, stones, ballast, timbers, brush or other rubbish or papers within any canal boundaries or along or over the canal banks. 30 All papers, litter, refuse, garbage or rubbish of any kind shall be placed in cans where provided for that purpose and throwing of rubbish, etc., upon the ground is forbidden.

(2) No person shall throw, dump or deposit garbage, ashes, paper, ordure, litter, or other rubbish from any vessel into canal waters. 35

Explosives, Dangerous Goods, Oil Products, Etc.

53. (1) No vessel whose cargo consists in whole or in part of any high explosive or dangerous goods, such as dynamite, nitro-glycerine, gun powder, blasting caps, detonating fuses, corrosive liquid, oxidizing material, etc., shall pass through any portion of the Dominion Canals unless and until written 40 authority therefor is given by the Minister and then only subject to such conditions and restrictions as by such written authority are laid down.

(2) No such high explosive or dangerous goods shall be brought on, carried over or through or stored or used on canal land unless and until written authority therefor is given by the Minister and then only subject to such conditions and 45 restrictions as by such authority are laid down.

(3) Vessels which are employed in carrying cargoes of fuel oil, crude oil or gasoline, whether they are loaded, partly loaded or empty, shall, while in canal waters, observe and fulfil all requirements which may be demanded from time to time by the General Superintendent or the Superintending Engineer 5 or the Superintendent.

Protection On and About Vessels

53A. The owner of any vessel in a canal or its approaches shall, at his own cost and risk, promptly and fully comply with all requirements of the General Superintendent from time to time with respect to the provision and 10 maintenance on or about such vessel of watchmen, lookouts, guards and other protection, and with respect to the number, qualifications and duties of the personnel to be so provided, the equipment (including arms, ammunition, etc.) and the distinctive arm band with which such personnel shall be provided and the time or times during which any or all of the said personnel, equipment or 15 protection shall be maintained.

Throwing Coins

82. The owner of a vessel within the limits of any canal shall not allow passengers or employees on such vessel to throw coins, money or things of any description to persons along a lock or canal.

20 **Ice.—Freezing over of St. Lawrence River.**—The upper St. Lawrence usually freezes over from shore to shore for varying periods during the late winter months, except in the rapids sections. Between Prescott and Ogdensburg ice-breaking ferries maintain a passage the year round. At the upper end there is regular passage for sleighs and motor vehicles for from two to three months 25 over the ice from Kingston to Cape Vincent, N.Y., via Wolfe Island. It is stated that some winters the waters of Lake Ontario freeze over for upwards of ten miles west of Kingston.

It has often happened that horse teams crossed the river from Gananoque to Clayton, N.Y. This was not possible in the winter of 1931-32. In this section 30 it is reported as dangerous to attempt to cross on the ice east of Gananoque and west of Rockport, except after extreme cold weather and with the services of a guide.

From Alexandria Bay, N.Y., it is seldom possible to cross for more than a period of two weeks and the safer route is from Clayton, N.Y., to Gananoque.

35 At Kingston in 1932 navigation in the harbour was closed from March 15 to March 30, and no ferry ran between Kingston and Wolfe Island during that period, whilst horsedrawn vehicles crossed daily on the ice most of that time.

During the eighty-four year period from 1857 to 1941, the earliest date of 40 closing of navigation at Kingston Harbour was December 14 and the earliest date of opening, March 5.

At Cape Vincent, N.Y., the average dates of season of navigation, are, opening April 4, and closing, December 25.

CHAPTER I

OTTAWA RIVER

Chart 49.

Ottawa River.—This, the largest and principal tributary of the St. Lawrence River enters the latter by several mouths above and below the Island of Montreal. The Ottawa River from its source, which is almost directly north of Ottawa, in the Grand Lake Victoria region, at the height of land which marks the commencement of the slope northward to Hudson Bay, to its junction with the St. Lawrence River at Montreal, is a distance of about 750 statute miles. It has a drainage basin of 56,043 square miles. 5

The discharge or flow of the Ottawa River varies largely, but there are no sudden variations, and the freshets occur only once a year, and always at about the same time. In general, the lowest stages occur in September and October, and often continue throughout the winter months, and the highest stages late in May and June, on account of the late spring at the headwaters. 10

At the Rideau lock gauges at the City of Ottawa, the record high water occurred in the year 1876 when the level reached to almost 25 feet above the low water record of 1846. Corresponding fluctuations of flow and water level at other points between Montreal and Ottawa vary according to the location and character of the river.

The country below Ottawa for some miles along the north shore, is rich in minerals. Important deposits of mica, opatite, graphite, etc., are found and have been developed.

The Ottawa River is navigated from the St. Lawrence River to Ottawa, canals and locks having been built to overcome the Ste. Anne, Carillon and Grenville Rapids, and channels dredged where necessary. 25

The draught available through these canals is about eight feet at extreme low water. (See page 6.)

Further navigation upstream above the City of Ottawa is obstructed by the Chaudière Falls, but a canal and series of locks commencing at that point lead from Ottawa by way of the Rideau River and lakes for $126\frac{1}{4}$ statute miles through the Province of Ontario to Kingston at the head of the St. Lawrence River and the foot of Lake Ontario. 30

The normal draught available through the Rideau Canals, locks and shoaler reaches is five feet. The number of locks, both ascending and descending on the Rideau Canal system is forty-seven. 35

Barge navigation existed on a large scale on the Ottawa River between Montreal and the Cities of Ottawa and Hull; at one time from 200 to 350 barges were coming up to carry lumber from points in the river to Montreal, Quebec, Lake Champlain and other points. The capacity of such barges was about 300 tons. In one year the total freight passing through the Ottawa River canals amounted to 337,850 tons. 40

Depths given for the Ottawa River are reduced to the sloping surface of the river at extreme low water observed in 1881 and correspond to a depth of 4.5 feet of water on the lower mitre sill of the lower entrance lock at the Rideau Canal, and 8.9 feet on the upper mitre sill at the upper entrance lock of the Grenville Canal. 45

For the description of the channel from Dixie front light to Ste. Anne de Bellevue, see page 15.

Chart 49.

Lake of Two Mountains is an expansion of the lower portion of the Ottawa River, 21 statute miles in length and, in places, 3 miles in width. It is entered from Lake St. Louis by means of the Ste. Anne lock (page 17) above which is a 5 dredged channel marked by spar buoys leading for $1\frac{3}{4}$ miles to abreast of Île aux Tourtes.

Light-buoy.—The shoal water off the western end of Île aux Tourtes is marked by a black light-buoy, showing a *flashing white* light.

Leading lights.—The upper entrance of Ste. Anne Canal is marked with 10 three leading lights; one 57 feet in height on the northeast pier of the canal, and known as upper entrance range front; one 74 feet in height on the bank of the canal at the Canadian Pacific Railway bridge, 415 feet from the front light, and known as upper entrance range back; and one, 21 feet in height, near the head of the embankment on the north side upper entrance to the canal, 625 feet 15 from the upper entrance range back; this third light is known as upper range-front. All three are *fixed white* lights.

The Ste. Anne upper entrance leading lights, in one bearing 128° , lead into the canal from Lake of Two Mountains. They should be left on the port hand by downbound vessels when entering the canal.

20 **Main channel into Lake of Two Mountains.—Buoys.**—This is marked, in addition to the leading lights, with four red spars and three black spars and a red and black horizontal-striped spar at the upper end.

When bound upstream from the canal and into Lake of Two Mountains, the back light in line astern with the more westerly and higher of the front lights 25 (upper entrance range front), bearing 128° leads from the canal entrance upstream until the red and black horizontal-striped buoy at the turn into Vaudreuil Bay is passed, when the course should be altered about 20° to the northward until the more easterly and lower front light (upper range-front) is brought on astern in line with the back light. These two latter lights should then be kept 30 in line astern past Île Cadieux light.

Vaudreuil Bay is the southern end of Lake of Two Mountains. It is mostly shallow and dotted with small islands. A channel dredged to 6 feet, and marked with seven red spar buoys, leads from the junction with the main channel, at the red and black spar buoy, southwestward to the wharf at the Village of 35 Vaudreuil. The Government wharf has a pierhead 64 feet in length and along the face is a depth of 8 feet.

From the southern end of Vaudreuil Bay the Vaudreuil mouth of the Ottawa River runs southward west of Île Perrot into Lake St. Louis. It is crossed by a bridge of the main highway to Montreal and the two bridges of 40 the Canadian National and the Canadian Pacific Railways.

Close south of the bridges this outlet to the St. Lawrence is blocked by rapids and is navigable only for small boats and canoes.

From the Vaudreuil Village Channel a dredged channel with 9 feet of water and marked by two black spar buoys, leads to the former wharf of the Standard 45 Explosive Company, near the east end of the railway bridge on the northwest shore of Île Perrot.

Vaudreuil Station (formerly known as Dorion) is a village on the west shore of the Vaudreuil mouth of the Ottawa River where the bridges cross from Île Perrot.

50 The shores of Vaudreuil Bay are dotted with cottages and summer residences.

Chart 49.

Rivière des Prairies.—The eastern arm of Lake of Two Mountains is mostly shoal with about 5 feet of water. Two branches of the Ottawa River flow eastward from it, one **Rivière des Prairies**, between the Island of Montreal on the south and Île Bizard and Isle Jésus on the north. At the head of **Rivière des Prairies** are the **Cap St. Jacques Rapids** and six miles downstream at the foot of Île Bizard, the **White Horse Rapids**. Seven miles further down the **Sault au Recollet Rapids** at Bordeaux and some power dams completely obstruct further navigation eastward. Along this stretch are located the Villages of **Bord à Plouffe**, **Cartierville** and **Bordeaux**, and a mile east of the latter are **Pont Viau** and **Ahuntsic**. Railway bridges cross the stream at White Horse Rapids and at Bordeaux, and highway bridges at Cartierville and Pont Viau. 5 10

A narrow channel at the foot or northern end of Île Bizard, in which are located Dutchman Rapids, also connects the east end of Lake of Two Mountains with **Rivière des Prairies**. 15

Rivière des Prairies has its eastern end at the junction with the St. Lawrence River at Bout de l'Île, foot of Montreal Island.

Rivière des Milles Îles, the third outlet of the Ottawa River, flows out of Lake of Two Mountains at its eastern end one mile north of the Dutchman Rapids. Two miles downstream at the mouth of **Rivière du Chêne**, a small tributary of **Rivière des Milles Îles**, is the Village of **St. Eustache**, where a highway bridge crosses the main stream. 20

Île Cadieux.—Lights.—Three miles above Ste. Anne lock is Île Cadieux projecting from the west shore of Lake of Two Mountains. On its extreme northeastern point are two *fixed white* lights, shown from lanterns on the top of 25 cylindrical tanks at heights of 21 and 12 feet. The lights are unwatched and the eastern light shows over the western one. The steamboat track passes a quarter of a mile off the lights and thence leads northwestward towards Oka Point light and wharf, distant $3\frac{1}{2}$ miles on the north shore.

Light-buoy.—A red light-buoy, showing a *flashing red* light, is moored on 30 a 6-foot spot, lying four-fifths of a mile northwest of Île Cadieux light. On the south side of the channel, abreast this buoy, is moored a black spar buoy, marking the north extreme of the shore bank.

The lake narrows to a width of one mile at a distance of a mile below Oka, between two projecting points—**Pointe Cavagnal** on the south and **Pointe aux 35 Bleuets** on the north shore, the former having a wharf with about 5 feet of water.

Buoys.—About 3 miles eastward of Pointe aux Bleuets is a small dry reef called Le Petit Rocher. Between this reef and the north shore are a number of submerged wrecks, marked by green spar buoys. About half-a-mile north-40 ward of the reef, at the entrance to La Grande Baie, is another wreck marked by a similar buoy.

Oka is a village on the north shore, $6\frac{1}{2}$ miles from Ste. Anne lock. It has a Government wharf with a depth of about 8 feet at the outer end. Forty feet from the west side of the wharf is a basin 200 feet long and 50 feet wide 45 which was dredged in 1937 to a depth of $5\frac{1}{2}$ feet. Close by the wharf is a prominent church. A road leads to a Trappist monastery at La Trappe, high up in the hills, three miles northeastward of the wharf.

Lights.—On the outer end of Oka wharf there is a *fixed* light, 26 feet above high water, which shows *red* to eastward and *white* to westward, and is visible 50 from all points of approach by water.

Chart 49.

Abreast of Oka and on the south shore of the lake is a station of the Canadian Pacific Railway. A channel dredged to 5 feet leads to the landing.

Como wharf lies on the south shore a little above and a mile across from 5 Oka with 5 or 6 feet of water at it.

Hudson Village, on the south side of the river about 2 miles above Oka, has a Government wharf with a face 100 feet in length; at the face is a depth of $8\frac{1}{2}$ feet. Close west of the wharf is a Government breakwater extending 140 feet easterly and thence 100 feet southerly forming a protected basin with depths 10 of 4 to 7 feet; alongside the southerly portion there is a depth of $7\frac{1}{2}$ to 9 feet on the outside. Hudson is a station on the Canadian Pacific Railway. Extending for a mile and a half up the shore is the summer resort of **Hudson Heights**. The hills behind rise to about 250 feet.

Buoys.—The upstream channel from the wharf to the main channel is 15 marked by a black spar buoy and two other black spar buoys are moored on the south side of the channel between Hudson and Corbeau Shoal.

Pointe du Lac.—**Light**.—On the north shore one and a half miles above Oka wharf and opposite Hudson Village there is a light on the top of a hill a short distance back from the water. It is *fixed white*, 144 feet above high 20 water and visible about 7 miles. It is also known as **Oka light** and with **Pointe aux Anglais** light, farther upstream, forms a range, bearing 122° , which leads through the main channel above the latter point. Between **Pointe du Lac** and **Parsons Point** on the opposite shore, the lake is less than a half mile in width.

Pointe aux Anglais, on the north shore, $4\frac{1}{4}$ miles above Oka wharf, has a 25 landing wharf and a buoyed channel leading into it from the main channel of the lake.

Leading lights.—On a pier, located about 400 yards off **Pointe aux Anglais**, two *fixed white* lights are shown at an elevation of 30 feet for the eastern and 33 feet for the western. The western of these lights and Oka light (**Pointe du** 30 **Lac**) in line astern, bearing 122° , lead up from a turn in the channel one mile above **Pointe aux Anglais** for $2\frac{1}{4}$ miles to the intersection of their alignment with that of the **Carillon Bay** leading lights.

Light-buoy.—A red light-buoy, showing a *flashing red* light, is moored 500 feet southwest of **Pointe aux Anglais** lighthouse.

35 **Corbeau shoal**, stony, with 2 feet of water, in the middle of the lake lies about a mile below **Pointe aux Anglais** light. It is marked with a black spar buoy and the main channel passes northward of it.

From Oka to above **Pointe aux Anglais** the steamboat channel follows the middle of the lake in deep water.

40 **Graham Point** lies on the south shore southwestward of and opposite **Pointe aux Anglais**. Just east of the point is situated **Choisy Landing** wharf. A buoyed channel leads from the deep water of the lake across the flats to the wharf. **Choisy** is a station on the Canadian Pacific Railway.

Immediately above **Pointe aux Anglais** and **Graham Point** the lake expands 45 to a width of about $3\frac{1}{2}$ miles. It is shoal for the most part, with one to 3 feet on the flats, but a deep water channel continues up the middle. About a mile above **Graham Point** is **Pointe à la Raquette** where the **Rivière à la Raquette**, a small stream, enters the lake.

Chart 49.

St. Placide is a village on the north shore of this expansion $2\frac{1}{4}$ miles above Pointe aux Anglais. It has a landing wharf. From a point in the main channel a mile above Pointe aux Anglais, a buoyed channel leads northwestward into St. Placide wharf. 5

A second and similar channel, dredged and buoyed leads from upstream to the wharf.

Pointe à Masson is a slight projection of the north shore a mile above St. Placide.

Carillon Island, $2\frac{1}{2}$ miles in length and three-quarters of a mile in width 10 occupies the extreme western end of Lake of Two Mountains, two miles above St. Placide. There is a channel both north and south of it. The northern channel is followed by continuing on the line of the Pointe aux Anglais and Oka lights, 122° , to the intersection of their alignment, at a point in the channel north of the east end of Carillon Island, with the alignment of the Carillon Bay 15 leading lights. The channel then follows close to the north shore of the island to its junction with the south channel at the west end of the island.

The south channel is reached, across the flats, by a buoyed channel which is a continuation, south of the main channel, of the upstream channel to St. Placide wharf. Thence the south channel flows in midstream between Carillon Island 20 and the south mainland shore.

Carillon Bay leading lights.—Two leading lights, *fixed white*, are shown, at elevations of 41 and 65 feet, from masts with white diamond-shaped day-marks, erected on the mainland north of the middle of Carillon Island; the lights in line, bearing 285° , lead through the north channel as already described. 25

On the northeast point of Jones Island, another *fixed white* light is shown, at an elevation of 24 feet, from a similar structure with a white shed at its base; this light in line with the front light of Carillon Bay leading lights, bearing 51° , leads southwestward through the narrow part of the north channel and past the west end of Carillon Island into the main river. 30

Light-buoy.—On the south side of the channel, at the intersection of Pointe aux Anglais-Oka Point ranges, is moored a black light-buoy showing a *flashing white* light.

Buoys.—A rocky shoal, with less than 6 feet of water over it, lies on the north side of the channel just below the lower end of Jones Island; three red spar 35 buoys mark the south side of this shoal. Two black spar buoys, moored abreast the upper end of Carillon Island, mark the south side of the channel.

River Rigaud enters the Ottawa on the south side opposite the upper end of Carillon Island; both the entrance and the channel for some distance up are buoyed. 40

Rigaud Town is on the Rivière Rigaud, 2 miles above the mouth, and is a station on the Canadian Pacific Railway.

From just above the head of Carillon Island at the west end of Lake of Two Mountains the Ottawa River narrows to a third of a mile in width and continues thus for $4\frac{1}{2}$ miles to the Carillon Canal. The steamboat channel is in 45 midstream until within a mile of the canal where the course lies closer to the northeast bank past **Weirs Shoal**, with 6 feet of water on it, lying in the middle of the river.

Buoys.—On each end of Weirs Shoal is moored a red and black horizontally-striped spar buoy. 50

Chart 49.

St. Andrews.—Three and a half miles below the Carillon lock, the **Rivière du Nord** flows into the Ottawa River from the north shore. It has a buoyed channel leading into and up for about $2\frac{1}{2}$ miles to the Town of St. Andrews. 5 The latter is a station on the Canadian National Railways to Montreal. About halfway between the mouth and St. Andrews is a Government wharf on each side of the river, 30 feet long parallel to the stream, with a depth of 8 feet along the face.

Carillon Canal.—The lower entrance of the Carillon Canal is, by the steam- 10 boat channel, $15\frac{3}{4}$ miles from Oka, and $22\frac{1}{2}$ miles from Ste. Anne lock. The canal is 0.94 statute miles in length and overcomes the Carillon Rapids. It has two locks. The lower, No. 1, is 202 feet 3 inches in length, 45 feet minimum width, with a normal depth of 12 feet of water over the sill. The lowest depth of water recorded for this sill is 10 feet. This lock has a lift of $10\frac{1}{2}$ feet.

15 The upper lock, No. 2, has a length of 200 feet 9 inches, a minimum width of 45 feet, with a normal depth of $9\frac{1}{2}$ feet over the sill. The lowest recorded depth for this sill is 8.17 feet. This lock has a lift of $3\frac{1}{2}$ feet.

Light.—A *fixed red* light is shown at the end of the point at the lower entrance of the canal. This light must be left to port when entering the canal.

20 **Wharf.**—At the village of Carillon is a wharf 270 feet long and 43 feet wide with a depth of 9 feet at the outer end; it is located about 900 feet below the canal lock.

Chart 45.

Point Fortune, a station on the Canadian Pacific Railway is a village on 25 the south shore away from Carillon Village. There are ferry landing wharves at both places.

Buoy.—A shoal, with a rock awash on its upper end, lies in midstream between Carillon and Point Fortune. On the east end of this shoal in midstream is moored a steel taper buoy painted in red and black horizontal stripes.

30 Three-quarters of a mile above the lower entrance of the canal, a dam extends across the rapids which raises the water in the river above the Carillon Rapids to about 9 feet over its former natural level, enabling the river above that point to be used for navigation.

Lock No. 2 or Carillon Canal upper entrance is half a mile above the lower 35 lock No. 1 and opposite the dam.

Leading lights.—Two *fixed white* leading lights are exhibited, at elevations of 27 and 48 feet, from lanterns on white open framework towers on the north bank of the canal near the upper gate of lock No. 2. In line they lead from the canal and south of Dewar's Island.

40 **Dewar's Island** lies near the north shore of the river a quarter of a mile above the upper entrance to the canal and the main channel is south of the island and on the line of the canal entrance leading lights. A third of a mile above Dewar's Island is the upper entrance of the old canal, now no longer used.

Buoys.—Two black spar buoys mark the channel at Dewar's Island. One is 45 moored opposite the upper end and the other abreast the middle of the island.

From the head of Carillon Canal to **Greece Point**, a distance of about five miles, there is unobstructed navigation.

Chart 45.

Chôte à Blondeau is a narrow curving reach of the river from Cushing on the north shore, 2 miles above Carillon to the Grenville Canal lower entrance. There was formerly a rapid at Chôte à Blondeau which was drowned out by the rising of the level of the river at the Carillon dam.

5

Chôte à Blondeau or St. Joachim, is a small village on the south shore $1\frac{1}{2}$ miles below Greece Point. There is a Government wharf 99 feet long, parallel to the stream, with a depth of 6 feet along the face.

Leading lights.—The front light is shown, at an elevation of 80 feet, from a lantern on a white open framework tower on the hillside above Cushing; 10 the back light is shown, at an elevation of 94 feet, from a similar structure located 1,100 feet eastward of the front. These lights are known as the Cushing lights and in line lead through the narrow channel in the drowned rapids of Chôte à Blondeau; they are *fixed white*.

On the north shore, inside the small island in Chôte à Blondeau, is the site 15 of an old lock which in earlier years assisted vessels past the rapids.

Another pair of *fixed white* leading lights, known as Chôte à Blondeau lights, lead through the narrow channel from the intersection of their alignment with that of the Cushing lights to Greece Point. The front light is shown, at an elevation of 23 feet, from a white square structure with a red roof on the west 20 end of the small island mentioned above; the back light is shown, at an elevation of 43 feet from a red square skeleton tower with white enclosed upper part and red-roofed lantern, located on the north shore 1,214 feet eastward of the back light, close by the old lock. The back light is also visible downstream.

Grenville Canal.—This canal, by which the Long Sault Rapids are avoided, 25 is about 56 miles below the City of Ottawa. The canal is a little over 5 nautical miles (5.94 statute) in length. It has five locks, each 200 feet in length and 45 feet in width. The depth of water over the sills is 9 feet 6 inches. The minimum depth provided for vessels passing through both the Carillon and Grenville Canals is 9 feet, except during periods of very low water.

30

Like the Carillon Canal, the Grenville Canal is on the north side of the river, its lower entrance, where is located lock No. 3, being at Greece Point. The total lockage in this canal is 43 feet.

Light.—There is a *fixed red* light at the outer end of the south entrance pier.

Just below the entrance is a ferry wharf for communication with the south 35 shore of the river. There are a number of islands in the Long Sault Rapids, the largest being **Stevens Island**, near the lower end.

Lock No. 4 is 1,200 feet above the entrance lock, and No. 5, three-quarters of a mile farther up, at the **Village of Stonefield**. Lock No. 7 is at the upper entrance and No. 6 over one mile below the latter.

40

Bridges.—A railway bridge of the Canadian National Railways crosses the river and the canal a quarter of a mile above lock No. 6 and a highway bridge is located one-third of a mile farther upstream. The minimum overhead clearance is 42 feet.

Grenville Village is on the north shore at the upper entrance to the canal. 45 The berth alongside the slab wharf, 100 feet wide and 550 feet long, was dredged in 1938 to a depth of 8 feet.

Chart 45.

Leading lights.—Two *fixed red* leading lights, erected on the west side of the canal at its upper entrance, in line, bearing 171° , lead from the canal entrance and east of the large shoal in the middle of the river, for two-thirds of a 5 mile. The lights are shown from masts with diamond-shaped daymarks at elevations of 18 and 40 feet.

Light-buoy.—A black light-buoy, showing a *flashing green* light, is moored 2,500 feet above the entrance to the canal on the north end of the shoal in the middle of the river.

- 10 **Hawkesbury**, a flourishing town on the south shore of the Ottawa River, opposite Grenville, is the largest town between the Cities of Ottawa and Mont-
real. It had a population of 6,249 in 1941 and has important lumbering and
pulp and paper industries. Its mills are visible for a considerable distance both
up and down the river. Some of the mills are located on **Great or Large Island**
15 lying close to the mainland shore.

There are landing wharves at Hawkesbury reached by an approach channel marked by spar buoys from the main channel of the river.

- From Grenville to the foot of the Rideau Canal locks at the City of Ottawa, a distance of $51\frac{3}{4}$ miles ($59\frac{1}{2}$ statute) by the centre line of the channel, there is 20 unobstructed river navigation.

The **Kingsey River**, a small stream enters the Ottawa River just above Grenville.

- Calumet** is a village on the Canadian Pacific Railway on the north shore, $2\frac{1}{2}$ miles above Grenville. The river here is about 2,000 feet in width and the 25 north shore is indented by some shallow, swampy bays, known as **Calumet**,
Pumpkin Seed and **C.P.R. Bays**. An old railway wharf with a spur line was at one time located in C.P.R. Bay.

Just above Calumet a transmission line, with a clearance of 60 feet at high water, crosses the river.

- 30 Just above this narrow reach of the Ottawa River, the river widens into an expansion $1\frac{1}{2}$ miles in width known as **L'Original Bay**, about 6 miles in length.

The Village of **L'Original** is on the south shore near the eastern end of this expansion and is distant $4\frac{1}{2}$ miles from Grenville.

- Leading lights.**—Furniss Point is half a mile above L'Original Village, and 35 on it are shown *fixed white* leading lights at elevations of 18 and 23 feet from white square buildings. These lights in line lead from abreast this village nearly to Calumet Village.

Chart 46.

- Pointe au Chêne** is a village on the north shore on the line of the 40 Canadian Pacific Railway, $2\frac{1}{2}$ miles above L'Original. Half a mile below the village is the mouth of **Pointe au Chêne Creek** and on the sandy west point of the creek is an abandoned lighthouse which will be left standing as a daymark.

- Azatika Bay** is a shallow arm on the south shore, at the west end of 45 L'Original Bay expansion. Into it flows **Dezomacane River**. Here the river again narrows to about 2,000 feet, maintaining this width for about 10 miles to Grande Presqu'île and Papineauville.

Chart 46.

Leading lights.—Near the lower end of this narrow reach and two and three-quarter miles above Pointe au Chêne, is **McTavish Point** at the mouth of Little Salmon River on the north shore. The front light is shown, at an elevation of 30 feet, from a white square structure with a red-roofed lantern. 5
on the extremity of the point. The back light, located 2,408 feet 279° from the front, is shown, at an elevation of 64 feet, from a white diamond-shaped day-mark with a black vertical stripe, on a pole with a small white shed at its base. The lights are *fixed white*.

Fassett is a village on the north shore about $2\frac{1}{2}$ miles above McTavish 10 Point light. The submerged part of the old Government wharf at this village is marked by a red spar buoy. Two miles farther upstream on the south side is the village of **Lefavre**, formerly called **St. Thomas d'Alfred**. Across from it is the mouth of **Salmon River**. **Montébello** Town on the north shore with a landing wharf, 90 feet long, lies a little over 2 miles above Lefavre and distant 15 13 statute miles from Grenville Canal.

Just above Montébello the Ottawa River north shore is deeply indented with long shallow bays whose lengths are parallel to the main stream forming **Grand Presqu'île**, **Petite Presqu'île**, **Arosen Island** and **Baie des Arcand**. 20 The main navigable channel is south of the islands and points, and follows fairly close to the south shore of the river. Arosen and another smaller island are at the east or lower entrance to **Baie de la Pentecôte** or **Papineauville Bay**, the latter being enclosed by Grande and Petite Presqu'île and the north shore. On this north shore of the bay is Papineauville Village.

Lucerne-in-Quebec is a resort on the north shore of the Ottawa River 25 just above Montébello embracing 80,000 acres of land and with a log chateau of 225 rooms. The mud flat that formerly lay in front of the chateau has been removed by dredging below low water level and a basin has been dredged to provide anchorage for pleasure craft with depth sufficient to accommodate anything that can pass the locks at Carillon. On the north side of the basin a wharf 30 has been built for the accommodation of guests' launches and yachts.

Light.—At Montébello the Ottawa River curves somewhat sharply to the southward and close to the south bank, across from, and about half a mile above Montébello is a small islet, **Ile Rosalie**, on which is erected a white square wooden building with a lantern and red roof. The light, *fixed green*, is 32 feet 35 above high water and visible in the channel both up and down stream.

Papineauville.—Between the small island just above Arosen Island and the east extremity of Presqu'île a narrow channel was dredged to a depth of 12 feet at low water leading northward into Papineauville Bay. It is marked by spar buoys. 40

Papineauville is a station on the Canadian Pacific Railway. There are sawmills, a foundry, boiler works and a mica factory located here.

From Montébello up to East Templeton the north shore of the Ottawa River is an alluvial flat about a mile wide, bordering a steep slope which has formed the ancient bank of the river. These flats are formed by the silt carried 45 down by tributary streams—the Gatineau, the Lièvre, the Blanche at Thurso and the North Nation at Plaisance. The flats are intersected by long bays, parallel to the main river, and are popular shooting grounds. During high water periods in May and June the flats and portions of the neighbouring lowlands are covered. 50

Chart 46.

Portions of the south shore are also submerged in like manner, notably below Wendover, at the mouth of the South Nation River, and above and below the Town of Rockland.

- 5 Between Ottawa and Hawkesbury, during the May and June flow, the river has a difference in level or slope of 5 feet. In consequence the current is greater during this period than in midsummer and the autumn.

Treadwell, on the south side of the river opposite Papineauville, is a small village with a wharf 150 feet long.

- 10 **Chabot**, a small village on the lower end of Grande Presqu'île, has a small wharf.

For three miles above Treadwell the river is narrow, contracting to about 1,000 feet width for the upper mile of this section.

- 15 **South Nation River** enters the Ottawa River on the south side $4\frac{1}{2}$ miles above Treadwell. It is navigable for two miles. On the north side of the Ottawa River, opposite the mouth of this stream, is the **Petite (North) Nation River**.

Plaisance Village is situated at the head of **Pentecôte Bay**.

Black Bay, a long, narrow, shallow bay of no importance, lies on the north side of the Ottawa River just above Petite Nation River.

20 *Chart 47.*

Wendover, a station on the Canadian National Railways, about a mile above the mouth of the South Nation River, has a Government wharf 108 feet long with about 9 feet of water along the face. The church steeple is a conspicuous mark from the river.

- 25 **Leading lights**.—Near the outer end of the Government wharf the front light is shown, at an elevation of 18 feet from a lantern on a white slatwork daymark on a small white shed. The back light is shown, at an elevation of 52 feet from a white slatwork daymark on a pole with a white shed at its base, located 3,830 feet 246° from the front light. The lights are *fixed white*.

- 30 **Thurso Islands light**.—A mile above Wendover is the lower end of a group of seven thickly-wooded islands that extend about two miles upstream. The largest of the group are **Dubé** and **Horseshoe Islands** and the steamboat channel lies between the small islands lying west and east, respectively, of these two islands. The extreme width of this channel is only 700 feet and the navigable
35 portion, owing to banks making out from both shores opposite the lower end of the island southwest of the channel, is restricted to 400 feet. It is possible, however, to carry 10 feet through here at the extreme low water stage of the river corresponding to 9 feet on the upper mitre sill of the upper entrance lock of the Grenville Canal. On the north shore of the river, 5 miles below Thurso
40 Village a light, *flashing white*, leads up the channel between the two islands mentioned above.

- Thurso Village**, on the north shore of the river, had in 1931 a population of 1,292. It is a station on the Canadian Pacific Railway and has a wharf with 100 feet frontage. In 1927 a company loaded 1,000,000 feet of hardwood here.
45 A ferry plies between Thurso and a point opposite on the south shore.

Three islands lie in the river abreast and just below Thurso, the two largest being **Clarence** and **Parker Islands**.

Chart 47.

Clarence Village, is half a mile above Thurso on the south side of the river.

Rockland, on the south side of the Ottawa, is 4 miles above Thurso. The wharf of the International Paper Company has a frontage of 100 feet with a depth of 3 feet along the face. A ferry plies from Rockland to Lochaber Bay on the north shore. Adjoining Rockland is the Village of **East Rockland**. 5

Lochaber Bay, on the bay of the same name, is a station on the Canadian Pacific Railway, opposite Rockland.

Gardipy Island (Larocque Island) is a long, low island lying just west of Rockland between **La Fontaine Bay** and the main channel of the Ottawa. 10

Chart 48.

Cumberland, on the south side of the river 5 miles above Rockland, has a wharf 90 feet long with a depth of about 7 feet along the face.

Ferry.—A ferry plies between Cumberland and Masson wharf.

Masson on the Lièvre River about a mile from its mouth had, in 1931, a population of 2,015. The wharf on the Ottawa River has a frontage of 90 feet. The station on the Canadian Pacific Railway is known as **Buckingham Junction**, and a branch line 4 miles long connects this place with Buckingham.

La Lièvre River enters the Ottawa River about a mile above Cumberland. A highway and a railway bridge cross the river at Masson and a short distance below these is a dam; another highway bridge crosses at Buckingham and about a mile above Masson is another dam.

Angers is a station on the Canadian Pacific Railway on the north shore of the Ottawa River, four miles west of Masson.

Connor Island, on the south side of the Ottawa River, extends upstream 25 from abreast Angers for 2 miles. On the north side of it a sandbar, dry at low stages of the river, extends halfway across the river from the south shore. Another sandbar, also dry at low stages of the river, lies about a quarter of a mile west of the above sandbar.

Way Shoal leading lights.—On the north bank of the river $1\frac{1}{2}$ miles below the mouth of Blanche River, two white masts with white diamond-shaped daymarks show *fixed white* lights which, in alignment, mark a channel across Way Shoal used for towing logs. These lights are in operation during the low stages of the river only, for a period of probably three months of each year.

Way Channel leading lights.—On the north bank of the river half a mile below the mouth of the Blanche River, two white masts with white diamond-shaped daymarks exhibit, at elevations of 14 and 30 feet, *fixed white* lights, which in alignment, bearing 249° , lead between Way Shoal and the north shore to a point nearly abeam of the front light of Besserer Crossing range, when the alignment should be left on the starboard hand to swing gradually into the alignment 40° of Besserer Crossing leading lights.

Besserer Crossing leading lights.—On the north side of the Ottawa River three-quarters of a mile below Blanche River two white masts with white diamond-shaped daymarks exhibit, at elevations of 14 and 30 feet, *fixed white* lights, which in alignment, bearing $36^\circ 30'$, lead through the channel across the head of Way Shoal from deep water on the south side of the river to a point abeam of the front light of Way Channel range.

Chart 48.

Blanche River and **La Petite Blanche River** are small streams 3 miles and $1\frac{1}{2}$ miles respectively above Angers on the north side of the river.

McLaren Bay, a long narrow basin parallel to the river lies just west of 5 Blanche River.

A large sandbar dry at low stages of the river extending halfway across from the north shore of the river lies abreast McLaren Bay.

East Templeton, a small village, with a wharf with 100 feet frontage is situated on the north shore 6 miles above Angers.

10 **Upper Duck** and **Lower Duck Islands** lie on the south side of the river abreast East Templeton. A sandbar, dry at low stages of the river, extends 1,000 feet to the westward and 1,000 feet north from the upper end of Upper Duck Island.

Green Shoal light.—On Green Shoal, abreast the lower end of Upper Duck 15 Island, half a mile below East Templeton wharf a white square structure with red lantern on a brown circular pier exhibits a *fixed white* light at an elevation of 38 feet.

Buoys.—Just above and below Green Shoal light the channel is marked by one black and three red spar buoys.

20 **Gatineau**, $2\frac{1}{2}$ miles above East Templeton on the north side of the river, is a station on the Canadian Pacific Railway. A large mill of the Canadian International Paper Company is located here with two wharves, one with a frontage of 200 feet. A channel 5,200 feet long and 100 feet wide has been dredged to 8 feet from deep water just below Kettle Island to the wharf at Gatineau.

25 **Piers**.—Just above the entrance, and 200 feet below the lower end of Kettle Island, there is a pier on the south edge of the channel. A submerged pier, close south of the channel, lies 300 feet above the lower end of Kettle Island, and another submerged pier is located 175 feet south of the latter pier.

Buoys.—The submerged pier mentioned above, close to the channel, is 30 marked by a black spar buoy. A red spar is moored abreast this black spar and these two spars mark the turn of the channel. In addition to these two buoys, the edge of the channel is also marked by three other red spars and three black spar buoys.

Kettle Island, $2\frac{1}{4}$ miles long, lies abreast of Gatineau. The steamboat chan- 35 nel is to the south of this island.

Gatineau River enters the Ottawa 2 miles below the Interprovincial or Alexandra bridge at Ottawa. A highway bridge crosses the river near its mouth and the Canadian Pacific Railway bridge is about $1\frac{1}{4}$ miles farther upstream. The Canadian International Paper Company has large power developments on 40 the river.

Gatineau Point Village, located on the east side of the Gatineau River at its mouth, has a landing wharf. A ferry plies between Gatineau Point and Rockcliffe, Ottawa.

Rideau River, a shallow stream, enters the Ottawa River, over the Rideau 45 Falls, one mile below the Alexandra bridge.

Chart 48.

OTTAWA, Capital of the Dominion of Canada, at the head of navigation on this section of the Ottawa River is $100\frac{1}{2}$ ($119\frac{1}{2}$ statute) miles from Montreal. It had a population of 150,861 in 1941. Supplies of all kinds can be obtained and repairs made. It is the northern terminus of the Rideau Canal 5 by which route the distance to Kingston is $109\cdot5$ ($126\frac{1}{4}$ statute) miles.

Highway No. 17 runs parallel and close to the south shore of the Ottawa River between Ottawa and Montreal. A bus service is maintained between these cities over this highway, serving all the villages on this side of the Ottawa River.

Highway No. 8, between the same two cities, lies on the north shore of the 10 Ottawa close to the river.

Hull, on the north side opposite Ottawa, had, in 1931, a population of 29,433. A wharf has been built out 460 feet from the shore and has a frontage of 130 feet. The city has several large plants for the manufacture of paper, lumber, matches, etc.

CHAPTER II

MONTREAL TO CORNWALL

Montreal Harbour.—A complete and detailed description of the Harbour of Montreal to the lower entrance of the Lachine Canal is contained in the 5 "St. Lawrence River Pilot, Quebec Harbour to Montreal Harbour."

Lachine Canal.—It is entered at the Montreal end by either of two locks, side by side, situated a quarter of a mile southwest from the outer end of the Alexandra pier, and known as north and south locks, the former built on the Montreal and the south lock on the Windmill Point side. The lockage, or difference of level between the water at Montreal and that of Lake St. Louis, is 46 $\frac{1}{4}$ 10 feet. (For details of canal see page xx.)

Laprairie.—From St. Lambert, the southeast shore of the St. Lawrence River trends southerly for 5 $\frac{1}{4}$ miles to the Town of Laprairie, which in 1931 had a population of 2,774. Here the river has a breadth of 4 $\frac{1}{2}$ miles. Steamers run 15 to Montreal, and Laprairie is a station of the Canadian National Railways.

Wharf.—At **Cote Ste. Catherine**, 3 miles above Laprairie, is a wharf with a face 85 feet long.

Lachine Rapids.—From Laprairie the shore of this lake expanse of the river, gradually curves westward for 4 $\frac{1}{2}$ miles to the lower end of Lachine Rapids, 20 which prevent all upward navigation. In these rapids lies **Ile aux Herons**. **Nuns Island**, 1 $\frac{1}{2}$ miles long northeast and southwest, is situated close to the Montreal side 1 $\frac{3}{4}$ miles farther down the St. Lawrence River, with its northeast extremity three-quarters of a mile above Victoria bridge. From the latter, the southeast coast of Montreal Island trends southwest 6 miles to the intake of the 25 Montreal waterworks viaduct, and, thence, the coast of the island runs northwest, 3 $\frac{1}{2}$ miles, to the upper, or Lake St. Louis entrance of Lachine Canal.

Chart 50.

Buoys.—The channel from Lachine Canal to the head of Lachine Rapids is marked by a red spar buoy moored 2,000 feet southwestward of Lachine front 30 leading light and a black spar buoy on the east end of Champlain Shoal.

Caughnawaga.—From abreast Ile aux Herons, the south shore of the St. Lawrence River trends northwesterly with an inward curve, 4 miles to the Indian Village and reservation of Caughnawaga, the population of the latter in 1921 being 2,652. **Ile au Diable** lies half a mile southwest of Ile aux Herons, and, 35 half a mile westward of Ile au Diable, the river narrows to a width of half a mile. Caughnawaga church is conspicuous from Lake St. Louis.

Bridges.—Two-thirds of a mile eastward of Caughnawaga, the Canadian Pacific Railway bridge, with 60 feet headroom, crosses the St. Lawrence River, the width, here, being half a mile.

40 About 2 cables below the railway bridge there is a traffic bridge connecting the villages of Ville La Salle and Caughnawaga; the channel for navigation, 375 feet wide, is near the south shore and has 62 feet headroom above low water stages.

Chart 50.

Lights.—At night the following lights are shown at the Canadian Pacific Railway swing bridge, across the canal, half a mile from the upper, or Lake St. Louis end. A *white* light is shown at each end of the swing protection. Both ends of the swing span carry lanterns, showing *red* lights when the passage is closed and *green* lights when the swing is open. 5

Lachine, at the Lake St. Louis entrance to the Lachine Canal had, in 1931, a population of 18,630. From the lake, the most conspicuous objects are the dome of the old convent, the two-spired church, a little west of it, and the tower of the new convent north of them. 10

Leading Lights.—On the outer end of Lachine Railway wharf, is erected a white circular structure, which, at a height of 28 feet above the water, shows a *fixed green* light, visible 12 miles.

This light is visible in the channel south of the lighthouse, as well as in the line of range. 15

The back *similar* structure and *fixed green* light stands 67°, 300 yards from the front light, and, at a height of 44 feet, is visible 14 miles. These lights in line, lead 1½ miles through a dredged channel 300 feet wide and 16 feet deep to abreast red light-buoy 38 S.

Light.—Canal Pier.—On a small low crib, 300 yards west of the end 20 of the pier between the new and old canals, is exhibited a *fixed red* light. It marks the dividing point of the entrances to these canals.

Buoyage.—Between Lachine wharf and the front Dixie light, four red light-buoys, showing *flashing red* lights, mark the north side of the channel, and a black light-buoy, showing a *flashing white* light, on the south side of the 25 channel, is moored on the northwest extreme of Chateauguay Shoal. A small rocky patch, with a depth of 8 feet over it, lies abreast the northeast extreme of Chateauguay Shoal; it is marked by the western red light-buoy, No. 40, of the four mentioned above. (This buoy is temporary and may be removed at any time.) This section of the channel is also marked by red spar and black 30 spar buoys.

A spot, with 10 feet over it, lies on the south side, close to the channel, one mile from Lachine wharf.

Lake St. Louis, an expansion of the St. Lawrence River, at its junction with the western mouth of the Ottawa River, is about 15 miles long, east and 35 west, with a greatest breadth of 7 miles. The land near the shore is low. The depth in the ship channel is nowhere less than the canal depth of 14 feet, and, in the western portion, considerably more. The current has an average rate of about half a knot. The western portion of the lake is occupied by Île Perrot, 7 miles long and 3½ miles broad, having narrow shallow canoe passages on either side, 40 into the portion of the Ottawa River named the Lake of Two Mountains. The northwest and southwest parts of Île Perrot are higher than the generality of the lake shore, that portion between Île Perrot Village (which has a small church) and **Pointe au Sable**, being about 80 feet high, and cultivated. Lake 45 St. Louis is called **Lachine Lake** by many of the pilots.

Pointe Claire.—From Lachine the north shore of Lake St. Louis trends in a general westerly direction, with a succession of curves 6½ miles, to Pointe Claire and the town of that name, which, in 1931, had a population of 4,058. A mile east of it is **Charlebois Point**, the west entrance point to **Valois Bay**, 1½ miles broad and three-quarters of a mile deep. Pointe Claire wharf has a 50

Chart 50.

face 110 feet long with a depth of 4 to 7 feet along the face. In the approach channel is a depth of $9\frac{1}{2}$ feet. A basin on the east side of the wharf, 750 feet long and 250 to 400 feet wide was dredged to a depth of $7\frac{1}{2}$ to 10 feet in 1935. The local steamboat calls at this wharf. Pointe Claire church is conspicuous from the lake. The stations of the Canadian National and the Canadian Pacific Railways are situated three-quarters of a mile back of the village. Between Lachine and Pointe Claire, are several villages, connected by rail with Montreal, the principal being **Summerlea, Dorval, and Valois**. Excepting when masked by Dorval Island, the church spire at the latter is very conspicuous from the channel.

The incorporated Town of Dorval Island, situated upon the island of the same name, has a population of about 165 and is one of the finest summer resorts near Montreal.

15 **Ferry.**—A ferry operates between the Village of Dorval and Dorval Island.

Marine railways.—The St. Lawrence Yacht Club has two marine railways at Dorval.

Steamboat Channel.—Buoyage.—Starting from abreast Dixie front light, a steamboat channel leads from the ship channel in Lake St. Louis to Ste. Anne de Bellevue and the Ottawa River. Marking the junction of the two channels, a light-buoy, No. 72, painted in red and black horizontal bands and showing a *flashing red* light, is moored 400 yards southwestward of Dixie front light. The west side of the channel is marked by a black light-buoy, No. 45, showing a *flashing white* light, moored 1,500 yards above No. 72, and two black spar buoys between Nos. 72 and 45.

Lights.—Dorval and Pointe Claire.—Dorval lighthouse, a white square building, is erected on a pier, situated a little to northward of the steamboat channel about half a mile south of Valois Point; at a height of 35 feet, it exhibits two *fixed green* lights, one from a headlight lantern and the other from a reflector in a headlight lantern. The lanterns are on two white cylindrical gas tanks on a concrete pier. The reflector lantern is placed northward of the lens lantern and the light shows to the southwestward along the channel.

Pointe Claire lights, also two *fixed green* lights, shown at an elevation of 29 feet, are, in all respects, similar to the Dorval lights; they are located nearly a mile southwestward of these lights. Dorval and Pointe Claire lights in line lead through the channel from the red light-buoy off Pointe Claire to half-way to Pointe Claire lighthouse.

Ste. Anne de Bellevue.—From Pointe Claire the north shore of Lake St. Louis runs westerly, nearly straight, $6\frac{1}{4}$ miles, to Ste. Anne de Bellevue at the entrance to the Ottawa River. The town, which, in 1931, had a population of 2,417, is a station on both the Canadian National and Canadian Pacific Railways, by which, it is distant from Montreal, 20 miles. Two bridges span **Ste. Anne Rapids**, famous in song, and cross to the northern portion of Île Perrot. By the steamboat channel, Ste. Anne de Bellevue is distant from Lachine railway wharf, $13\frac{1}{2}$ miles. The Macdonald Agricultural College is the largest and most conspicuous group of buildings in the town.

Buoyage.—A black spar buoy is moored at the turn in the channel, 450 yards southward of Dorval lighthouse. Near Pointe Claire lighthouse two rocky shallow spots, on the edges of the channel, are marked by a red spar and a black spar buoy. Opposite Pointe Claire a red light-buoy, No. 50, showing a *fixed red* light, marks the intersection of the alignment of the Pointe Claire-Dorval lights and the Dowker Point-Caron Point lights.

Chart 50.

Lights.—On Dowker Point, the northeast extreme of **Lynch Island**, is erected a structure with a white concrete base surmounted by a white steel cylindrical tank with red lantern that, at an elevation of 20 feet above the water, exhibits a *fixed red* light. The light is unwatched. 5

On Caron Point, situated $1\frac{3}{4}$ miles east of Ste. Anne Canal lock, is erected on a concrete pier a white square steel skeleton tower with red square iron lantern and white slatted daymark on the eastern side, that, from a height of 28 feet above the water, exhibits a *fixed red* light. This light in line with Dowker Point light at the north edge of the trees on Lynch Island, bearing 259° , leads through 10 2 miles of the steamboat channel approaching Ottawa River.

Buoys.—A red spar buoy is moored on the edge of the channel 2 miles eastward of Dowker Point and a black spar buoy half a mile from the same point marks the turn in the channel off the alignment of Dowker Point-Caron Point lights. 15

Buoys.—The channel between Dowker Point and Sherringham Park is marked by red spar and black spar buoys. One of the red buoys, half a mile from the point, marks a spot, with $10\frac{1}{2}$ feet over it, lying in the middle of the channel. Two red spar buoys mark the channel between Sherringham Park and Ste. Anne de Bellevue. 20

Channel.—**Buoys.**—In 1938 a channel, 100 feet wide, lying between Madore Island and Pointe du Domaine, known locally as La Passe, was dredged to a depth of 5 feet. Small boats may save considerable time by using this channel in the passage from the Ottawa River to Beauharnois and the St. Lawrence River. The north and south entrances to this channel are each marked 25 by a red spar and a black spar buoy.

Île Perrot leading lights.—These *fixed white* lights are situated on the island of that name, and on the west point of **Madore Bay**. The front is shown from a white square lantern with a red roof at an elevation of 23 feet; the rear is shown from a pole, with a white diamond-shaped daymark, at an elevation 30 of 31 feet. Both are visible, in the line of the range, 2 miles.

These lights in line, 235° , lead up through the new channel from the bend at Dowker wharf, on Lynch Island, to the point at **Sherringham Park**.

Wharf.—Half a mile west of Sherringham Park is a Government wharf with a face 78 feet in length; along the face is a depth of $10\frac{1}{2}$ feet. 35

Lights.—**Ste. Anne de Bellevue.**—The northern light is shown from a white square structure on the northwest end of the dredged channel cribwork off Brussy Point. The southern light is shown from a white skeleton tower near the southeast end of the same cribwork. At a height of 24 feet, each structure exhibits a *fixed white* light. 40

Wharves.—A Government wharf, 120 feet long, parallel to the channel, with 6 feet of water along the face, is situated 400 feet below the lower end of the lock of Ste. Anne de Bellevue. The McColl-Frontenac wharf is situated immediately below the Government wharf; in 1939 a berth, 100 feet long at this wharf, was dredged to a depth of 9 feet. 45

Ste. Anne lock.—The new lock, (*see* page xxvi) 200 feet long and 45 feet wide, has a depth of 9 feet on the sill; the old lock, 190 feet long and the same width as the new, has only 6 feet on the sill. By means of either of these locks and the canal, 220 yards long, the difference in level of 3 feet between Lake St.

Chart 50.

Louis and Lake of Two Mountains, Ottawa River, is overcome. For 27 miles across the latter, there is a navigable stretch on the Ottawa River to the Carillon Rapids, which are overcome by the canal of this name, one mile in length, the 5 locks of which are available to the same class of vessel.

The Long Sault Rapids, a short distance above, are avoided by the Grenville Canal of similar proportions and depth, whence, to Ottawa City, distant 56 miles, there is unimpeded navigation.

(For Ottawa River, *see* Chap. I.)

- 10 **Lights.—Ste. Anne lock.**—On the end of the pier, 400 yards southeast of Ste. Anne lock, is shown from a square building, a *fixed red* light at a height of 12 feet.

Upper entrance leading lights:

Front light.—On the northeast pier of the canal is erected a mast with a 15 white diamond-shaped slatwork daymark having a black border, which shows a *fixed white* light at a height of 57 feet, visible 2 miles.

Back light.—On the canal bank, at the C.P.R. bridge, 415 feet, 128° from the above front light is situated a mast with a white diamond-shaped slatwork daymark having a black border, showing at an elevation of 74 feet a *fixed white* 20 light visible 4 miles.

These two lights in alignment lead from the buoy at the turn into Vaudreuil Bay, to the canal lock.

Outer front light.—At a height of 21 feet, a *fixed white* light 625 feet, 313° from the common back light at the bridge, is shown from a mast with white 25 diamond-shaped slatwork daymark, and is visible 5 miles.

This is the most northwesterly of the three lights immediately above the three Ste. Anne bridges. The alignment with the common back light, leads from Île Cadieux to Île aux Tourtes, in Lake of Two Mountains.

Directions, Lachine to Ste. Anne de Bellevue.—By the steamboat 30 channel, there are two tracks, the deeper one being by a branch of the ship channel south of Dixie, Bushy and Dorval Islands, and diverging from the ship channel at Dixie front leading light, for description of which, *see* page 16. This track is used by all but the lightest draught steamers.

By the shallow track northward of the above islands, Lachine railway 35 station on the wharf, is kept in line with the two-spired church at Lachine, the vessel steering 271° for a mile from the railway wharf, then steer 293° for nearly a third of a mile, until Dorval light comes in sight touching the north side of the island of that name, bearing 264°. This range is kept from abreast Picard Point, for half a mile, or, until the east end of Dorval Island is nearly abeam. Marion 40 Point is now steered for, bearing 276°, for a third of a mile. When 150 yards from the northwest point of Dorval Island, Pointe Claire light should be steered for, bearing 255°, for 1½ miles, until Dorval light is on the starboard beam, distant 250 yards.

The track is joined here, by the deeper steamboat channel southward of 45 Dorval Island (*see* page 16). A 252° course for 1½ miles, is now kept, passing between the red spar and the black spar buoy off Pointe Claire light. Hence, Pointe Claire wharf may be steered for, if calling there, or, if continuing, the Dorval and Pointe Claire lights must be kept in line, astern, the vessel steering 248° until abreast red light-buoy 50 S. Thence, Caron Point light should be seen 50 in line with Dowker Point light at the north edge of the trees on Lynch Island,

Chart 50.

and steer 259°, for 2 miles. Here, a vessel should haul slowly round **Thompson Point** to the north of Dowker light, steering 283° for half a mile, and then keep Caron Point light a little on the starboard bow, to take the range of Île Perrot lights at a point one cable north of Lynch Island wharf. Keep them in one 234° until 500 yards from the front light, when haul up 263° and keep the Île Perrot shore close aboard until the Ste. Anne de Bellevue lights are almost on.

When a little west of Île Perrot wharf, haul sharply northward, passing to the east of Ste. Anne de Bellevue northeast light, and, thence, through the narrow cribwork channel; when abreast the northwestern Ste. Anne de Bellevue light, steer for the southeast entrance of Ste. Anne Canal, marked by the light described on page 18.

St. Bernard Island.—From Caughnawaga wharf, the south shore of Lake St. Louis trends, irregularly, westerly, $3\frac{1}{2}$ miles, to the north extreme of St. Bernard Island, close east of which, is the mouth of the **Chateauguay River**. The north coast of St. Bernard Island is low, and, with the exception of a couple of conspicuous trees, quite bare of woods.

The southwest extremity of St. Bernard Island is marked by a small conspicuous green hill, about 100 feet high, named **The Mound**, on which is erected a cross. A channel, one mile long, for light draught vessels, leads to Chateauguay, south of The Mound.

Chateauguay is situated on the river of this name, $1\frac{1}{4}$ miles from its mouth, and close to the south end of St. Bernard Island. It is a station of the New York Central Railway, having connection with Montreal and Valleyfield, from the former of which it is distant, by rail, 14 miles. A steamboat runs between Montreal and Chateauguay. There is a Government wharf with a face 143 feet long and along the face is a depth of 8 feet.

Beacons.—Buoys.—Two sets of diamond-shaped beacons, near the north end of St. Bernard Island, guide small craft into Chateauguay River, and the entrance is buoyed. In 1938 it was reported that there was a depth of 8 feet in the channel.

Dixie leading lights.—Front.—A white wooden tower, stands on a concrete pier, in 7 feet of water, $2\frac{1}{2}$ miles 253° from Lachine wharf front light. It exhibits at an elevation of 33 feet a *fixed green* light, visible 10 miles over an arc of 135° on each side of the range.

The back brown skeleton tower with white wooden slatwork on the side facing the alignment and with a white lantern, stands on a similar pier close off the northwest side of Dixie Island, 1.25 miles 51° from the front light. It exhibits at an elevation of 83 feet a *fixed green* light, visible 10 miles in the line of the range only.

The lights in one bearing 231° lead westward-bound vessels, from abreast light-buoy 72 S., to their intersection with the Melocheville range.

Beauharnois.—The shore of the lake trends, from The Mound, south-westerly, a distance of $7\frac{1}{2}$ miles, to **Pointe St. Louis**, close northwest of the Town of Beauharnois, which in 1941, had a population of 3,538. This town has connection with Montreal and Valleyfield, by the New York Central Railway, and, with the Canadian National Railways, through **St. Martine Junction**, distant about 6 miles. It has also steamboat communication with Montreal and the landing pier a mile west of Windmill Point of Île Perrot. Its church has two spires, and situated on low land northwest of the church, is a large factory. There is a Government wharf extending first 83 feet north and thence the same

Chart 50.

distance west. In 1932 a berth, with a depth of 13 feet, was dredged alongside each section. The wharf is protected by a breakwater, 150 feet in length, with a depth of 12 feet in the berth, 80 feet in length, alongside. The channel of 5 approach, with a least depth of 10 feet, is marked by spar buoys.

The shore between St. Bernard Island and Beauharnois is fronted by an extensive group of low islands, known as **Iles de la Paix**, being separated from **Point Hébert**, $1\frac{1}{3}$ miles east of Beauharnois, by **Bergeron Channel**, narrow and crooked.

10 **Beauharnois leading lights.**—The front light is a lantern on a white diamond-shaped slatwork daymark erected on the wharf, that at an elevation of 14 feet shows a *fixed red* light visible 4 miles. The back light, 415 feet 175° from the front, is a similar structure also showing a *fixed red* light at an elevation of 30 feet, and visible 10 miles.

15 **New Beauharnois Canal.**—The Beauharnois development consists of a power house on the shore of Lake St. Louis, and a canal south of the St. Lawrence River about 15 miles long and 3,000 feet wide, connecting Lake St. Louis and Lake St. Francis. The difference of elevation of the two lakes, amounting to 83 feet, is overcome by a single lock. The head of the canal is a third of a 20 mile south of Grosse Pointe, and the power house is located midway between the Villages of Beauharnois and Melocheville.

Melocheville, at the east entrance to the old Beauharnois Canal, is 2 miles westward of Beauharnois. The canal has a length of 12 miles, with depth of 9 feet on the sills of the locks, but, since the opening of Soulanges Canal on the 25 opposite side of the river, has been abandoned for navigation purposes.

Leading lights.—*Fixed red* leading lights are shown on the south side of the lower end of the old Beauharnois Canal; the front light is shown, at an elevation of 42 feet, from a white square structure with a red lantern; the back light is shown at an elevation of 88 feet from a red steel skeleton tower sur- 30 mounted by a white watch room with a red iron lantern, 1,478 feet from the front light. The lights in line, bearing 232° , lead from abreast Windmill Point to their intersection with the Cascades range.

Westward, 2 miles from Melocheville, is **Pointe Buisson**, where the river, under the name of **Split Rock Rapids**, is but 830 yards wide. Between the last 35 named point and Joubert Island, are Cascades Rapids; whilst between Melocheville and Cascades Island are the **Haystacks Rapids**; the narrow water between Cascades Island and the point of this name, is known as **Les Faucilles**.

Cascades Point, on the northwest side of the St. Lawrence River, is situated at the west end of Lake St. Louis, and a mile northwest of Melocheville, the 40 river space between being occupied by **Cascades** and **Joubert Islands**. The river, here, becomes a series of rapids, through which steamers, drawing less than 5 feet, can descend.

Caution.—Examination of the channel between Cascades Island and the 5-foot shoal to the east has shown that the water throughout this channel has 45 shoaled greatly since 1906, and that spots with depths of 13 feet, or less, are numerous. One such spot in particular lies half a mile east of the northern extreme of Cascades Island. From the 5-foot spot, a spit extends, 1,200 feet, southwesterly, having depths of 10 and 13 feet.

Lights.—**Cascades leading lights.**—The front white square wooden 50 tower stands 50 feet back from the water's edge three-quarters of a mile northward of Cascades Church, and at an elevation of 32 feet, exhibits a *fixed*

Chart 50.

white light, visible five miles in the line of range. The back similar structure stands half a mile west of the front, and exhibits at an elevation of 87 feet a *fixed white* light, visible five miles in the line of range. These lights in line bearing 273° lead, from their intersection with Melocheville range, up to their intersection with Soulanges Canal leading lights. 5

Soulanges Canal, on the northwest side of the river, connects Lakes St. Louis and St. Francis, overcoming the natural rapids and shallows between them. The length of the canal is $14\frac{3}{4}$ miles, the depth on the sills of its locks is 15 feet the length and breadth of the locks being 280 and 46 feet, respectively. 10 It has five locks, one being a guard lock. The distance by the ship channel between the entrance locks of the Lachine and Soulanges Canals is 16 miles (see also page xxi).

The canal is illuminated by electricity. The lockage, or difference of level between Lakes St. Louis and St. Francis, is $83\frac{1}{2}$ feet. 15

Semaphore.—A semaphore has been installed at the guard gate of the Soulanges Canal south side, to signal eastbound vessels whether or not lock No. 3 is ready for them. When lock No. 3 is occupied, the arm of the semaphore will be set horizontally in the daytime against eastbound traffic and at night a red light will be shown; when the lock is clear, the arm will be set vertically in the daytime, and a green light will be displayed at night. 20

Bridge signal lights.—Red lights placed two feet out of line of the white lights have been installed 2,400 feet above and below each of the five swing bridges over the Soulanges Canal, for the purpose of notifying navigators of vessels when to signal to have the bridges opened. 25

Leading Lights.—**Soulanges Canal lower entrance**.—The front white circular structure stands on the canal northern pierhead, and, at a height of 37 feet above the water, exhibits a *fixed red* light, visible 2 miles. The back similar structure 59 feet above the water stands 1,826 feet 244° from the other, and exhibits, also, a *fixed red* light, visible 2 miles, in the alignment of the lights. 30

These lights in line, lead to its intersection with Cascades range.

Chart 49.

Vaudreuil station.—To Cascades Point, the western branch of the Ottawa River flows from Vaudreuil station a distance of 5 miles, the channel being suitable for small craft only. The village had, in 1941, a population of 35 514, and has connection with Montreal, Ottawa, and Toronto by both the Canadian Pacific and Canadian National Railways, the Ottawa River, here, being spanned by two railway bridges.

Chart 50.

Buoyage.—Between Dixie light and Soulanges Canal, the north and 40 northwest sides of the channel are marked by five red light buoys, showing *flashing red* lights, numbered from eastward 76 S, 86 S, 98 S, 100 S, and 104 S; and the southwest side of the channel is marked by two black light buoys, 77 S and an unnumbered buoy $1\frac{3}{4}$ miles above 77 S, both showing *flashing white* lights. In addition to the light-buoys this part of the channel is marked by 45 ten red spar and four black spar buoys.

Caution.—Investigation of the shoal lying off Windmill Point shows that the shoal area has increased and now extends further to the eastward and southward. A spot, with 6 feet of water over it, rock bottom, lies 2,500 feet 88°

Chart 50.

from Windmill Point, and a depth of 12 feet will be found about 300 feet south of the 6-foot spot. At this place the ship channel takes a sweep to the southward to avoid the shoal water, marked by a red light-buoy.

- 5 **Directions, Lachine to Soulanges Canal.**—Leaving Lachine Canal, a vessel will bring the Lachine leading lights in line astern, steering 247° for $1\frac{3}{4}$ miles, as far as red light-buoy 38 S, passing northward of two black spar buoys and southward of red light-buoys 20 S and 26 S, and seven red spar buoys.

- From light-buoy 38 S steer 263° three-quarters of a mile to about 150 yards south of Dixie front leading light, passing between light-buoys 40 S and 41 S. Hence haul westward and southward to pass in mid-channel southeastward of red and black buoy, 72 S, and a red spar buoy, and northwestward of two black spars, bringing gradually in line astern the lights of Dixie range, steering 231° about six miles for red light-buoy 98 S, near Windmill Point, keeping south of red light-buoys 76 S and 86 S and eight red spar buoys, and close northward of black light-buoy 77 S, and the black light-buoy about half a mile below red light-buoy 86 S. When approaching light-buoy 98 S, the range should be left so as to pass south of this buoy.

- From light-buoy 98 S the line of the Melocheville leading lights, bearing 232° should be kept for 3 miles until nearly up to red light-buoy 100 S. Round the buoy and bring the Cascades leading lights on, steering 273° , for $2\frac{1}{2}$ miles, to light-buoy 104 S, passing south of red spar 102 S. Leaving light-buoy 104 S on the starboard hand proceed 244° for the entrance of Soulanges Canal on the line of the leading lights.

- 25 **Lachine Rapids, Chateauguay, Ste. Anne de Bellevue.**—A vessel leaving Lachine Canal and wishing to run the rapids will pass between the red spar buoy moored southwesterly of Lachine wharf and the black spar buoy on Champlain Shoal, and proceed downstream.

- If proceeding to Chateauguay River, a vessel, when past red spar buoy 32 S, one-third of a mile below light-buoy 38 S (see above), will steer 228° with St. Bernard Island beacons in line, for $1\frac{3}{4}$ miles, until the inner set of beacons comes in line, leading into the river mouth. (See page 19.)

- If bound to Ste. Anne de Bellevue by the steamboat channel a vessel will steer to pass close northward of light-buoy 72 S, then steer about a mile 305° for Dorval light, passing close northwestward of two black spars, and of black cylindrical light-buoy 45 S; a vessel should turn in time not to approach the latter light, nearer than 250 yards, whence proceed by steamboat channel as directed on page 18.

- Soulanges Canal to Lachine.**—Steer 64° from Soulanges Canal, with the 40 canal leading lights in line astern, until Cascades leading lights come on, or to within 300 yards of red light-buoy 104 S, when haul sharply eastward to bring the Cascades leading lights in line astern, steering 93° , $2\frac{1}{2}$ miles, to red light-buoy 100 S. From red light-buoy 100 S, keep the Melocheville leading lights in line astern, steering 52° , for 3 miles, or until red light-buoy 98 S, off Windmill Point is reached. When approaching this buoy the range should be left so as to pass to the south of it. From this point the Dixie range lights should be seen, in line ahead, bearing 51° . Steer to pass south of the red spar, and red light-buoys, until about a cable southward of red and black light-buoy 72 S.

- Hence haul to northward and eastward, to pass about a cable south of 50 Dixie front light, when a course of 83° should be steered for about three-quarters of a mile, to red light-buoy 38 S, having passed between light-buoys 41 S and

Chart 50.

40 S. From light-buoy 38 S, steer 67° with the Lachine leading lights in line ahead for $1\frac{3}{4}$ miles. On the latter range, a vessel will leave seven red spar buoys, and red light buoys 20 S and 26 S on her port, and three black spars, on her star-board hand. A vessel may now proceed to the canal, or wharf, as necessary. 5

If running Lachine Rapids, a vessel from red-light buoy 38 S, will steer 80° for 9 cables, then haul to southward to pass close north of the black spar buoy, at the head of Lachine Rapids.

Chart 49.

Coteau and Cedar Rapids.—The portion of the St. Lawrence River between 10 Lakes St. Louis and St. Francis, about $14\frac{1}{2}$ miles in length, has, in the western half, several islands, the largest of which is **Île de Salaberry**, 6 miles long, and $1\frac{3}{4}$ miles in average breadth. The southwestern part is traversed by the Canadian National Railways. **St. Timothée** on the south and **Cedars** opposite it, on the north shore, are situated nearly midway between the lakes, are marked 15 by large power plants, and are separated by **Cedar Rapids**. **Coteau du Lac** on the north shore, having, in 1941, a population of 445, is 3 miles northeast of Coteau Landing and near the mouths of **Rivière Rouge** and **Rivière Delisle**. Between Coteau du Lac and Coteau Landing, are **Coteau Rapids**.

Crib.—A crib has been built in the river just above Juillet Island, near 20 the Village of Cedars, closing it to navigation and now the sole means for transit of vessels from Lake St. Louis to Lake St. Francis is by way of the Soulanges Canal.

Wharf.—At Coteau du Lac there is a Government wharf on the south side of the canal with a face 89 feet in length; along the face is a depth of 10 feet. 25

Chart 51.

Lake St. Francis, an expansion of the St. Lawrence River, is 27 ($23\frac{1}{2}$ nautical) miles long, from the Canadian National Railways bridge at Coteau Landing, to Glengarry Point, its greatest breadth being 4 miles. The shores are low, and the strength of the current is not great, nowhere exceeding a rate of 30 half a knot. The principal villages on the northwest shore of the lake are Coteau Landing, South Lancaster, and Summerstown. The Canadian National Railways follow this shore from 1 to 2 miles back, Lancaster station being about $1\frac{1}{2}$ miles from the village on the shore. On the southeast shore, the only village near the lake, is St. Anicet, with its very conspicuous church. The southwestern 35 portion of this shore is very low, and, sometimes, under water.

The boundary on the northwest shore, between the Provinces of Quebec and Ontario, is near McKies Point. On the southeast shore, the southern limit of Quebec Province, is the International Boundary line of the forty-fifth parallel of latitude. 40

The depths in the ship channel of Lake St. Francis are nowhere less than the canal depth, 14 feet, and, in the greater part of the channel, considerably more. This lake is spoken of, by some of the pilots, as **Coteau Lake**.

Valleyfield or Salaberry de Valleyfield, had, in 1941, a population of 16,968, and is situated on the southeast shore, and at the northeast end of 45 Lake St. Francis. It also stands at the upper end of the old Beauharnois Canal (see page 20.) It is connected to Montreal by the New York Central Railway; to Montreal, Toronto, and Ottawa, also, by the Canadian National Railways through Coteau Junction. A portion of the town is built on Île de Salaberry

Chart 51.

connected to the southeast main shore by a dam. The Canadian National Railways bridge crosses from this island to the same shore, half a mile eastward of the town.

- 5 The cathedral spire, and the tall chimney with the large factories northwest of it, are conspicuous from the lake.

Manufactures.—Valleyfield is a manufacturing town, the principal industry being cotton goods. The value of its manufactures, in 1922, was \$9,783,246.

- 10 The entrance of the new Beauharnois Canal lies one-third of a mile south of Grosse Pointe. (*See* page 20).

Channel.—**Buoys.**—The channel that was formerly used for about 4,500 feet eastward of Knight Point, has been closed and a new channel located to the northward, passing close to Clark Island. This channel, marked by 15 spar buoys, has a least depth of $10\frac{1}{2}$ feet. It should be noted that the buoys in the entrance to this harbour from upstream are red to starboard and black to port as Valleyfield, from the upper entrance of the Soulanges Canal, is considered the head of navigation.

Chart 52.

- 20 **Buoys.**—A red spar buoy is moored 400 yards west of Grosse Point Island to mark the edge of the shorebank. A middleground, with a least depth of 9 feet, lying halfway between Grosse Pointe Island and Coteau Landing, is marked by a black spar buoy.

The submerged pier, on the north side of the channel opposite Knight 25 Point is marked by two red spar buoys moored at the east and west ends.

Port Lewis.—From Grosse Pointe, the low southeast shore of Lake St. Francis turns abruptly, and runs south $2\frac{3}{4}$ miles, forming the east shore of **Hungry Bay**. Hence, the shore trends nearly west, $6\frac{1}{4}$ miles, to the landing wharf at the small **Village of Port Lewis**. This wharf has a "T" end $98\frac{1}{2}$ feet 30 long with a depth of 7 feet along the face.

Grenadier Island.—Eastward $1\frac{1}{2}$ miles from Port Lewis wharf, is **Biron Point**, close northeast of which is a small island called **Franc Tireurs**. Grenadier Island, 270 yards long, 100 yards broad and about 10 feet high, is situated 355° , distant a mile from Biron Point. The trees on the island being different 35 in character from those on the neighbouring shore, together with a small house, render it conspicuous. Shoal water extends three-quarters of a mile east and west of it, and, in the latter direction, is situated a small cluster of stones, above water, known as **The Lump**.

A **bank**, a third of a mile long northeast and southwest, with 5 to 6 feet 40 water over it, lies $1\frac{1}{2}$ miles 305° from **Pointe Seigneuriale**, in the bottom of Hungry Bay.

Pointe Caissonnettes.—From Port Lewis, the south shore of Lake St. Francis trends westward $3\frac{3}{4}$ miles to Pointe Caissonnettes, two-thirds of a mile northeast of St. Anicet wharf. **Caza Island**, small, and close to the shore, is 45 situated three-quarters of a mile eastward of Pointe Caissonnettes.

Ile Chrétien, the largest of three, is situated $1\frac{1}{2}$ miles northeast of Pointe Caissonnettes, and a quarter of a mile off **Pointe Casault**.

Chart 52.

Port Lewis Flats.—The south shore of Lake St. Francis, between Île Chrétien and the bottom of Hungry Bay is fronted by a shallow bank, 300 yards wide at Île Chrétien, $2\frac{1}{4}$ miles off Port Lewis, and one mile off the bottom of Hungry Bay, on which is a least depth of 8 feet, leaving a channel between it and the bank from the north shore, a third of a mile wide, with depths over 18 feet. 5

Clearing marks.—St. Zotique church in line with Hay Point, 43° , leads 200 yards northwest of Port Lewis Flats.

St. Anicet is a small village on the southeast shore. Its church is a very 10 ornate and imposing edifice, the dome being particularly conspicuous, and serving as a useful steering mark. The Government wharf has a face 93 feet long with a depth of $6\frac{1}{2}$ feet in the berth along the face. A depth of 7 feet can be taken to the wharf. Half a mile east of St. Anicet, is the mouth of a stream named **Rivière à la Guerre**. 15

St. Anicet Shoal, with 5 feet water over it, lies off Pointe Caissonnettes and St. Anicet, its length northeast and southwest being $2\frac{1}{4}$ miles; it is separated from the shorebank at those places, by a channel 200 yards broad and 20 feet deep. The ship channel, a third of a mile wide, with not less than this depth, passes between St. Anicet Shoal and Pointe Mouillée Flats. 20

Light-buoy.—On the northwest edge of St. Anicet Shoal and on the south-east side of the ship channel, is moored a black cylindrical light-buoy, 57F showing a *flashing white* light. It bears 352° distant one mile from St. Anicet church.

The ruins of a small pier, about 10 feet high, lie close southeast of the buoy 25 on the edge of the bank. This pier originally supported St. Anicet Shoal light-house, which has disappeared.

Buoyage.—A black spar buoy is moored on the north edge of St. Anicet Shoal, three-quarters of a mile below the old lighthouse pier; a similar buoy is moored on an isolated spot, with a depth of 18 feet over it, off Île Chrétien 30 and a third black spar buoy marks the edge of the shorebank three-quarters of a mile below the island.

Pointe Dupuis, on the south shore, is situated a little over 2 miles westward of St. Anicet, the flat between, under the depth of 6 feet, and in places practically dry, extending out more than half a mile. A small islet, named 35 **Lanouette**, with three smaller ones, lies close westward of the point.

Cherry Island light.—This island, quite small, with trees close west of the lighthouse, lies three-quarters of a mile northeasterly of Pointe Dupuis, about $1\frac{1}{2}$ miles westward of St. Anicet church, and, three-tenths of a mile from the nearest land. On it is erected a white hexagonal building, which, at a height of 40 40 feet above the water exhibits a *fixed white* light, visible in clear weather 11 miles. This light is unwatched.

Chart 51.

South Channel.—From abreast Pointe Dupuis a series of channels lead up the southern portion of Lake St. Francis, uniting with the steamer channels near 45 the east end of St. Regis Island. This portion of the lake is a maze of shoal areas overgrown with weeds and rushes in midsummer and with many deep, winding intersecting channels, none of which have any artificial aids to navigation. They are quite navigable, however, for yachts and motor-boats by using

Chart 51.

ordinary caution, and lead to various summer resorts along the south shore, as **Frasers Point** (south shore) opposite the point of the same name on the north shore, Salmon River and Hopkins Point. Bordering this southern channel are 5 **Sheep, Cat, Kitten, Buchanan, Senécal, Content, Tarryawhile, Christies, Plum, and Round** Islands, in the order named. Some of these islands are privately owned, others being Indian reserve territory.

Chart 52.

Coteau Landing, on the northwest shore, and at the northeast extremity of 10 Lake St. Francis, is situated opposite the entrance to Soulanges Canal. It had, in 1941, a population of 390. Through the Canadian National Railways junction, $1\frac{1}{2}$ miles inland, there is railway connection with Toronto, Ottawa, and Montreal. The Canadian National Railways bridge crosses the St. Lawrence River half a mile below the southern canal entrance pier. The depths at the 15 wharves are not less than 12 feet, but the railway wharves should not be approached without local knowledge. A breakwater protecting the entrance to the canal lying in a northwesterly and southeasterly direction and about 550 feet long, is situated with its southern end bearing 230° , 300 yards from the west end of the canal entrance pier.

20 **Lights.**—On the southeast end of the breakwater, there is erected a steel tank surmounted by a lantern from which is exhibited a *flashing red* light, 17 feet above high water, visible 8 miles. This light is unwatched.

Soulanges Canal upper entrance leading lights.—The front white circular building stands on the outer end of the northwest guard pier of the 25 canal, and at a height of 31 feet above the water, exhibits a *fixed red* light, visible 6 miles. The back similar structure is situated 1,585 feet 37° from the front light, and exhibits a *similar light* at a height of 46 feet, visible 6 miles. The line of these lights, indicates the northwest edge of the dredged channel, and leads close *northwest* of red light-buoy 36 F.

30 **Buoys.**—A bank, under a depth of 12 feet a quarter of a mile long, east and west, upon which the breakwater is constructed, lies 150 yards easterly of the Government wharf at Coteau Landing. On the eastern portion of the bank there is a depth of 7 feet. A rock, with 9 feet of water on it, lying on the central portion of this middleground, is marked by a red and black horizontally-striped 35 buoy, 32 F, situated 200 yards, 116° from Coteau Landing light.

A vessel from the canal, can carry 12 feet to the Government wharf, by passing 150 yards southwest of the breakwater light, and 50 yards northeast of buoy 32 F. From the westward, not less than that depth may be had from light buoy 36 F to the wharf.

40 A red light-buoy, 36 F, showing a *flashing red* light, is moored 70 yards southeast of the line of the Soulanges Canal leading lights, and distant from the front light, $1\frac{1}{4}$ miles.

St. Zotique is situated on the northwest shore, its wharf being 1.7 miles southwestward from the Government wharf at Coteau Landing. The head of 45 the wharf is 132 feet long with a depth of 10 feet along the face. The church spire is conspicuous.

Buoy.—A red spar buoy, 38 F, lies three-quarters of a mile south of St. Zotique church spire.

Chart 52.

McKies Point.—From St. Zotique, the northwest shore runs in a general southwesterly direction, 5 miles to McKies Point, approximately marking the boundary between Quebec and Ontario Provinces. From the northeast, McKies Point, up to within $1\frac{1}{2}$ miles of it, has the appearance of an island. The 3-fathom edge of the shorebank between Coteau Landing and McKies Point, is fairly straight. The low, bare projection with a few huts on it, 2 miles westward of St. Zotique, is called **Hay Point**.

Buoyage.—Marking the edge of this shorebank, 2.7 miles 60° from McKies Point light, is moored a red cylindrical light-buoy, 40 F, showing a *flashing red* light. It lies one-half mile southwest of Hay Point. One mile farther upstream and bearing 65° , distant 1.6 miles from McKies Point light, is a black cylindrical light-buoy, 43 F, showing a *flashing white* light. It lies on the southeast side of the ships' track and 240 yards off the north edge of Port Lewis Flats. A black spar buoy, 45 F, is moored on the edge of the same bank, 215° , half a mile from 15 the above light-buoy 43 F.

A black spar, 41 F, is moored between the two light-buoys, 40 F, and 43 F, 770 yards northeastward of 43 F on the north edge of a shoal patch, having a least depth of 11 feet.

Light.—On the extremity of McKies Point is situated a white square wooden building, which, at a height of 36 feet, exhibits a *fixed white* light, visible 10 miles.

Pointe Mouillée is 4 miles westward of McKies Point, and the shore between forms a deep bight, with depths under 10 feet. **Woods, Gunn, and Sutherland Creeks**, discharge into this bight.

Pointe Mouillée Flats.—In addition to the shorebanks on either side of Pointe Mouillée, a shallow area, with as little as 5 feet of water on its eastern portion, extends 3 miles down the lake from Pointe Mouillée, and takes the name of Pointe Mouillée Flats.

Light-buoy.—On the north side of the ship channel and near the eastern extremity of the flats, is moored a red light-buoy, 48 F, showing a *flashing red* light, bearing 191° , distant 1.4 miles from McKies Point light.

South Lancaster.—From Pointe Mouillée, the north shore runs with a considerable inward curve, west of south, $5\frac{1}{2}$ miles to South (sometimes called East) Lancaster, Ontario, the pier at which has a depth of 9 feet. South Lancaster has a church, but it is not very conspicuous from the lake. A public road connects it with Lancaster, three-quarters of a mile distant, a station of the Canadian National Railways, by which communication is had with Toronto and Montreal, the latter distant 54 miles. A passenger steamboat calls. Lancaster had, in 1941, a population of 675.

The course for South Lancaster wharf is from St. Anicet Shoal black light-buoy, 250° , for $5\frac{1}{2}$ miles and then haul up for the wharf.

Island Bank.—The shore between Pointe Mouillée and South Lancaster is fronted by extensive flats, the almost disconnected portion, a mile long, east and west, with depth of 5 feet, being known as Island Bank. Formerly Island Bank was separated by deep water, called **North Gully** (now filled in) from the shallow banks north of it, the ship channel between the bank and Lancaster bar light (see page 28) being named **South Gully**.

Chart 52.

Buoyage.—The southern edge of Island Bank is marked by a red cylindrical light-buoy, 68 F, showing a *flashing red* light, bearing from Cherry Island light, 256°, distant $1\frac{1}{2}$ miles.

- 5 A red light-buoy, 60 F, showing a *flashing red* light, moored a mile below Cherry Island light, marks the east edge of the shoal water off Pointe Mouillée.

Chart 53.

Lancaster Bar.—The area of shallow water, almost blocking the river, but with a deep channel through it, southeast of Lancaster, is called Lancaster Bar.

- 10 **Light.**—Near the edge of the shallow bank on the southeast side of the ship channel, is erected a white square wooden building, which, from a height of 29 feet above the lake, exhibits a *fixed white* light, visible 8 miles in clear weather. It is $2\frac{1}{2}$ miles 253° from Cherry Island light. The building, like Lancaster light, is erected on a small crib. It has a small breakwater west of it, to defend it
15 from running ice.

- Butternut and Ross Islands** occupy the middle of Lake St. Francis south of South Lancaster, the first and northern island being a quarter of a mile, and the other, half a mile in length. Butternut Island, which has several farm buildings near its northern end, lies close to the southeast side of the ship channel.
20 From both islands, shallow banks extend northeastward 3 miles or to half a mile below Lancaster Bar lighthouse. Southeastward of these two and Thompson Island, the extensive shallow flats are pierced by three unbuoyed channels (in addition to the southern unbuoyed mentioned on page 31) which join the ship channel at Island Bank on the northeast, and at Hamilton Island on the south-
25 west. These three passages, although narrow in places, have more than the canal depth of 14 feet.

Buoyage.—A black cylindrical light-buoy, 69 F, known as East Lancaster Bar buoy, showing a *flashing white* light, is moored on the south side of the ship channel, half a mile eastward of Lancaster Bar lighthouse.

- 30 A red spar buoy, 70 F, is moored opposite 69 F.

A black spar buoy, 71 F, lies nearly the same distance westward of the light. On the southeast side of the ship channel, and on the northwest edge of these extensive flats, is also moored a black spar buoy, 77 F, one mile below the northeast extremity of Butternut Island.

- 35 Between the last-mentioned two buoys, but on the northwest side of the ship channel, are moored a red spar buoy, 74 F, and a red cylindrical, light-buoy, 76 F, showing a *flashing red* light, distant one mile, and $1\frac{1}{2}$ miles, respectively, southwestward of Lancaster Bar lighthouse.

- Black River, or Rivière aux Raisins,** on the northwest shore, joins Lake
40 St. Francis close west of South Lancaster. It is crossed near the mouth by a bridge, over which The King's Highway passes, and $1\frac{1}{2}$ miles from the mouth it is spanned by the Canadian National Railways bridge, as far as which, there is water for steamboats of light draught.

- Fraser Point.**—From the mouth of Black River, the shore trends south-
45 westerly 3 miles to Fraser Point, a third of a mile northeast of which is a creek of the same name. Two islands lie a quarter of a mile off this shore, named **Cairn and Grape Islands**, a third of a mile, a little over a mile, respectively, southwestward of South Lancaster. The first, as its name indicates, has erected upon it a conspicuous stone cairn, called by some, **The Monument**. The shoal
50 flats from this shore, as mentioned above, take the name of Lancaster Bar.

Chart 53.

Lancaster Light.—Near the east edge of the shore flat, and on the northwest side of the ship channel, $1\frac{1}{2}$ miles northeastward of Fraser Point, is erected a white hexagonal wooden building, exhibiting, at a height of 33 feet above the water, a *flashing white* light, visible, in clear weather, from a distance of 10 5 miles. This light is unwatched.

Squaw Island, about 5 feet high with a few bushes on it, is small and situated between Fraser Point and Butternut Island, on the northwest side of the ship channel.

Light-buoy.—A little east of the northeast extremity of a middleground 10 with 3 feet water over it, is placed a red spar light-buoy, 78 F, showing a *flashing red* light, 350 yards south of the southeast extreme of Squaw Island. Vessels pass southeast of this buoy.

Highlander Shoal.—**Buoy.**—The red spar buoy, 80 F, marking this middleground, with 18 feet water on it, is moored a quarter of a mile below 15 St. Francis Middleground light (*see below*). The vessels' track is southeast of this shoal.

Horseback Shoal, with 12 feet water on it, on the southeast side of the ship channel, is half a mile northeastward of Highlander Shoal and is not buoyed.

Hamilton Island.—From Fraser Point, the northwest shore of Lake 20 St. Francis trends southwesterly, $2\frac{1}{4}$ miles, to a point close to the west extremity of Hamilton Island, and a third of a mile northeast of Summerstown wharf, with 12 feet water at it. The last mentioned island, connected to the main shore by a bridge under which is a shallow boat passage, is three-quarters of a mile long, east and west, by half a mile broad. Southwestward, 200 yards from its light-25 house, is a wharf alongside which there is good water. The ground of Hamilton Island is about 30 feet above the lake, and the compactness of the trees on its southeast side gives it a rounded and distinguishable character. It has a number of cottages on it.

Light.—On the southeast coast of Hamilton Island is erected a white square 30 wooden building, which, at a height of 42 feet above the lake, exhibits a *fixed white* light, visible 10 miles.

St. Francis Island, a third of a mile long and 350 yards in greatest breadth, lies northeast of Hamilton Island, being separated from it and the north shore 35 by channels suitable for small craft.

Thompson Island, three-quarters of a mile long, and a third of a mile in greatest breadth, is situated on the southeast side of the ship channel, half a mile from St. Francis Island. It has farm buildings on it near its northern and northeastern points.

St. Francis Middleground.—Situated in the ship channel 300 yards south 40 of the middle of St. Francis Island, is a small middleground with 11 feet water over it; vessels pass between it and St. Francis Island.

Light.—On the northeast extremity of this middleground is erected a white cylindrical steel gas tank rising from a concrete base, surmounted by a red iron box and red lantern. It shows from a height of 26 feet above the water, a *fixed red* light, visible 4 miles from all points of approach.

Glengarry Point.—The northwest shore of Lake St. Francis trends from Hamilton Island westerly, nearly $3\frac{3}{4}$ miles to Glengarry Point, which may be considered the western limit of the lake.

Chart 53.

Light-buoy.—A red light-buoy, 88 F, showing a *flashing red* light is moored 500 feet south of Glengarry Point.

Renshaw Island, on the northwest side of the ship channel and nearly half a mile long, northeast and southwest, is separated from Hamilton Island by a narrow boat channel with depth of 9 feet. The island is flat, 5 feet high, and has some small shacks on its southern extremity.

Buoyage.—A black cylindrical light-buoy, 83 F, showing a *flashing white* light, lies on the southeast side of the ship channel, opposite the lower end of 10 Renshaw Island.

On the north side of the channel, opposite this light-buoy, is moored a red spar buoy, 82 F.

On the mainland behind Renshaw Island is the small Village of **Summers-town**. Its wharf has approaches for small craft both east and west of the 15 above-mentioned island.

Half a mile westward of Summerstown is **Caribou Cameron**, with a conspicuous church spire, and a dwelling.

Clark Island is situated on the same side of the ship channel, and about 400 yards from the main shore, from which it is separated by a narrow lane of deep 20 water. It lies three-quarters of a mile southwest of Renshaw Island, the space between them being occupied by shallow rocky banks, with the exception of a passage for vessels of light draught.

Light-buoy.—A red cylindrical light-buoy, 84 F, showing a *flashing red* light is moored on the northwest side of the ship channel, and east of Clark 25 Island.

Stanley Island.—Between Hamilton Island and Glengarry Point, but on the southeast side of the ship channel, there are several islands, the north-eastern one being named **Little Hog Island**, with small buildings on it. Stanley Island, also on the southeast side of the channel, is situated a quarter of a mile 30 west of Little Hog Island, a narrow, but deepwater channel running between them. On the north side of Stanley Island is a Government wharf with a face 140 feet in length; along the face is a depth of 14 feet. There is a large summer hotel on the island and several houses. A broad and deep unbuoyed channel passes southward of both these islands, joining the ship channel south of Clark 35 Island.

Buoy.—A black spar buoy, 85 F, opposite Clark Island light-buoy, marks the west extremity of the bank from Stanley and **Jacob Islands**. The width of the ship channel, here, between buoys 84 F and 85 F, is only 200 yards.

Dickerson Island, nearly $1\frac{1}{2}$ miles east of Glengarry Point, and, on the 40 south side of the ship channel, is separated from **Canal Island** by a narrow channel 20 feet deep.

Grass Island between Dickerson Island and Glengarry Point is low and separated from the former by a broad and deep channel, and, from the latter by the ship channel, a quarter of a mile wide, and over 10 fathoms in depth.

45 **Light-buoy.**—A black cylindrical light-buoy, 87 F, showing a *flashing white* light, is moored off the north end of the shoal water making off north from Grass Island.

Chart 53.

Salmon River.—From Pointe Dupuis, the marshy irregular south shore of the lake trends in a general southwest direction 7 miles and then 3 miles nearly west to the mouth of Salmon River. From abreast Pointe Dupuis to the mouth of Salmon River and Round Island, there is an unbuoyed channel, narrowing in places to 150 yards, through which more than the canal depth (14 feet) can be carried. (See also page 28.) 5

Salmon River can be navigated by small craft, drawing not more than 4 feet, to the International Boundary, where are situated the Village of **Dundee**, in Quebec Province, and the Village of **Fort Covington**, New York State. 10

Half a mile north of this river mouth is **Round Island**, with three others farther east, the easternmost and largest being heavily wooded, and known as **Christies Island**, and is a part of the St. Regis Indian reservation. There are, also, between Pointe Dupuis and this last-mentioned island, ten small islands, all lying between the southeast shore and the unbuoyed channel previously mentioned. 15

Half a mile west of the mouth of Salmon River is **Hopkins Point** with an old wharf and a few cottages.

Local shallow-draught steamboats, 80 feet in length and two to four feet draught, at one time ran from Cornwall to the Salmon River and up that stream to Dundee, calling at the wharves at St. Regis, Summerstown, Stanley Island, Hamilton Island, and Hopkins Point, and using the channel between Stanley and Little Hog Islands and across the flats to Hopkins Point. 20

St. Regis Village and River.—From the mouth of Salmon River the shore runs in a general westerly direction, 6 miles to St. Regis River, which with a depth at entrance of 6 feet, empties into the St. Lawrence River close east of the village. This shore is fronted by marshy shallow flats, on the outer edge of which are several low islands, separated from each other and the main shore, by narrow and usually deep channels. Close to the north sides of these islands runs a deep, although, in some places, narrow, unbuoyed channel, connecting with the ship channel southeast of Glengarry Point. 30

St. Regis Village, on the west side of the mouth of St. Regis River, and marked by a stone church, in Canadian territory, is inhabited by Indians. The forty-fifth parallel of latitude, the International Boundary on the southeast side of the St. Lawrence River, between Canada and the United States, runs through the village. St. Regis wharf has 12 feet of water alongside. 35

St. Regis Island, 100 feet in height, 3 miles long northeast and southwest, and three-quarters of a mile in greatest breadth, occupies the middle of the St. Lawrence River between Glengarry Point and St. Regis Village; the channels round it are deep. 40

Graveyard Point, on the northwest shore of the river, is situated a mile westward of Glengarry Point, the shore between, lined with scattered cottages, being slightly curved inward.

Farlinger Point lies a mile westward of Graveyard Point, the shore between forming a deep indentation. 45

Colquhoun Island, in two parts, lies 600 yards southwest of Graveyard Point. The ship channel formerly led northward of the island, but is now between it and St. Regis Island. The lower portion of Colquhoun Island has a row of cottages along its southeast side. Boulders, dry at low water, extend about 400 yards northeast from the lower end of the island. 50

Chart 53.

St. Regis dyke is the name given to the cribwork, 500 feet in length, built along the south side of the channel on the edge of the bank extending 400 yards from the northeast extremity of Cornwall Island and marking the south side of the ship channel.

Leading Lights.—Front.—On the northwest end of the dyke is erected a white cylindrical steel structure, which, at a height of 18 feet above the water, exhibits a *fixed white* light, visible 7 miles.

Back.—On the southeast end of the dyke stands a *similar* structure and a *fixed white* light elevated 30 feet and visible 7 miles. These lights in line, bearing $95^{\circ} 30'$, lead along the north edge of the shoal water from Cornwall Island. To clear this bank, the southeast light should be kept 103° , and well open north of the front light.

The dredged cut, about 300 feet wide, of which the dyke forms the south-15 west side, has a depth of over 14 feet.

The Crabs are three similar, round, bushy islets, without trees, about 7 feet high, lying on the bar, which, with the exception of the cut above alluded to, connects Colquhoun Island to the northeast point of Cornwall Island. That, nearest the latter, is known as **First**, the middle one, **Second**, and that nearest 20 Colquhoun Island, **Third Crab**.

Buoyage.—The northeast side of the St. Regis dyke dredged cut, is marked by two red spar buoys, and, the approach to the cut from the northwest, by a red light cylindrical buoy, 96 F, showing a *flashing red* light, moored, also, on the northeast side of the channel.

25 **Pilon Island**, half a mile long and a little less in breadth, lies close southwest of Farlinger Point and is separated from The Crabs by the old ship channel no longer used as such. From **Grays Creek**, in the bight north of Pilon Island, the north shore of the St. Lawrence River trends southwesterly 2 miles to a point at **St. Lawrence Park**, and thence nearly west half a mile to the entrance 30 locks of Cornwall Canal.

Light-buoy.—St. Lawrence Park red cylindrical light-buoy showing a *flashing red* light, is moored at the edge of the shoal off the point one-half mile east of the canal entrance.

Cornwall Island of Canada (an Indian reserve) is 5 miles long east and 35 west, its eastern and western portions being a mile in breadth. It extends $2\frac{1}{2}$ miles below, and $1\frac{1}{2}$ miles above the limits of Cornwall Town. A deep channel divides it from St. Regis Island and from the south shore. The New York Central Railway crosses to its western portion, and thence to the United States mainland shore, by two bridges. It is separated from Massena Point in United 40 States territory on the west, by a narrow but deep channel, known as **Pollys Gut**. (See page 37.)

Cornwall, by the Canadian National Railways, is distant 67 miles from Montreal, and 105 miles from Kingston. It has, also, connection by the same line with Toronto, and, with Ottawa and New York, by the New York 45 Central Railway. It is also connected with the main line of the Canadian Pacific Railway at St. Polycarpe Junction, distant 29 miles. Cornwall has steamship communication with Kingston, Toronto, Montreal and other places, during the summer. The population in 1941 was 13,810.

Chart 53.

Wharves.—On the north bank of the canal, and immediately west of the town, is a wharf, 1,170 feet long, with 14 feet of water alongside. On the river, at the foot of the north lock, is a wharf 500 feet long, with 9 feet of water alongside at low water. An old wharf is situated near the cotton factory, on the north bank of the river, two-thirds of a mile above the locks entrance. 5

Cornwall Canal.—The eastern entrance to this canal is distant from the western end of Soulanges Canal, 31 (28 nautical) miles by the ship channel, over which stretch there is not less than the canal depth, 14 feet, and generally more. The Cornwall Canal was constructed to overcome Long Sault Rapids, its length to its western entrance at Dickinson Landing being 11 miles, with a width of 90 feet at the bottom and 154 feet at the water surface. It has six locks. At Cornwall, there are two entrance locks, but the northern and older one, with an available length of 175 feet and a width of 50 feet, has but 9 feet on its sill, and is seldom used. The newer lock has 14 feet on the sill, as have the other five locks of the series, their dimensions being available length 270 feet, and breadth $43\frac{2}{3}$ feet. The lockage, or difference of surface level between the two ends of the canal, is 48 feet. The canal is lighted by electricity. Vessels can berth temporarily in the old canal, and in the broad space at the junction of the old and new, half a mile above the entrance. (For entering signals, and canal regulations, see page xxxi.) 15 20

Prominent objects at the Cornwall entrance to the canal are chimney stacks, a high water tower and the towers of the power transmission cable.

Bridge.—A railway bridge crosses the canal and river just west of Cornwall; it has been planked over so that automobiles may use it. 25

Directions, Soulanges Canal to Cornwall.—From the southwest entrance to Soulanges Canal, the course is 210° for three-quarters of a mile, or until 100 yards southeast of red light-buoy 36 F passing 60 yards on the same side of the breakwater light. From abreast light-buoy 36 F, haul westward and steer 238° for 4.6 miles, with McKies Point light a very little on the starboard bow, until abreast black light-buoy 43 F. On this course a vessel will pass 150 yards southeast of red spar buoy 38 F off St. Zotique, red light-buoy 40 F off Hay Point, and black spar 41 F marking the 11-foot middleground. 30

When rounding light-buoy 43 F, Cherry Island light, distant $7\frac{1}{2}$ miles, will be seen, if the night be clear, a little open northwest of St. Anicet Shoal light-buoy, bearing 225° , which line clears Port Lewis flats, marked by black spar buoy 45 F. In the daytime, St. Zotique church in line with Hay Point bearing 43° , leads about 200 yards northwest of the same flats. 35

When abreast of black light-buoy 43 F, alter course to 216° to pass 200 yards southeast of red light-buoy 48 F and 150 yards northwest of black spar buoy 40 45 F. Keep this course for 2.7 miles or until abreast red light-buoy 48 F. From this position the course for 6 miles is 235° , passing not less than 100 yards northwest of two black spar buoys and St. Anicet Shoal black light-buoy, 150 yards southeast of red light-buoy 60 F and 240 yards southeast of red light-buoy 68 F marking the east end of Island Bank, and the southernmost of all lights seen in that direction. 45

When abreast St. Anicet Shoal black light-buoy, the Island Bank red light-buoy 68 F should be seen on the starboard bow, with Cherry Island light a point on the port bow. When abreast red light-buoy 68 F, alter course and be guided by the buoys marking the narrow but deep passage 200 yards wide, formerly called South Gully, steering 267° , for one mile so as to pass 200 yards south of Island Bank light-buoy 68 F, 100 yards on the same side of red spar buoy 70 F, 50

Chart 53.

and 100 yards north of Lancaster Bar black light-buoy 69 F. Thence, haul very gradually southward for rather over a third of a mile, until 200 yards northwest of Lancaster Bar lighthouse.

- 5 To ensure being north of the flats westward of Cherry Island light, Hamilton Island light should be kept shut in with the south coast of Butternut Island, as, when seen open *south* of that Island, 231° , it leads dangerously close to the northern edge of those flats. From the position abreast of Lancaster Bar light, distant 200 yards, haul gradually southward to a course 229° , steering for Lancaster lighthouse on the northwest side of the channel, for $2\frac{1}{3}$ miles, or until within a quarter of a mile of that light, and the same distance above black spar buoy 77 F, passing 100 yards northwest of black spar buoy 71 F, the same distance southeast of red light-buoy 76 F, and 250 yards southeast of red spar 74 F.

- From this position, haul southward, and steer 206° , with Squaw Island red light-buoy 78 F, a little on the starboard bow, for $1\frac{1}{2}$ miles, until 100 yards southeast of that buoy. Now haul westward and steer 226° , for 2.2 miles with St. Francis Middleground lighthouse as much on the port bow as Hamilton Island lighthouse is on the starboard bow, until 150 yards south of the latter lighthouse. On this course, care must be taken to keep north of Horseback Shoal with 12 feet water over it, half a mile southwest from Squaw Island light-buoy 78 F. The course passes 200 yards southeast of the red spar buoy 80 F, on Highlander Shoal (*see* page 29). The water is deep close to the north side of St. Francis Middleground light. From the position off Hamilton Island light steer 234° to leave black light-buoy 83 F, on the port hand, and with Clark Island red light-buoy 84 F, a very little on the starboard bow, for half a mile, when the vessel should be nearly midway between black light-buoy 83 F and red spar buoy 82 F.

- Clark Island light-buoy 84 F, should now be brought a very little on the port bow, the vessel steering 239° for a little over three-quarters of a mile, or until 70 yards northwest of Stanley Island wharf. Thence, the same light-buoy may be steered for, until abreast the southwest end of Jacob Island, when a vessel should alter course to pass in mid-channel between it and black spar buoy 85 F, the width here, between the buoys, being only 200 yards. From this position, the course is 255° for 1.8 miles, until 70 yards north of Grass Island black light-buoy 87 F.

- Hence, a vessel must turn southward, and steer 242° for St. Regis dyke southeast light. After running on this course for 3.3 miles, passing 100 yards southeast of Glengarry Point red light-buoy 88 F, the vessel should be up to the southeast entrance of St. Regis dyke dredged cut. Haul up westward to pass through this cut, with the dyke and its two lights on the port hand, and the three red buoys on the starboard hand. When through, steer 283° with St. Regis dyke southeast, and higher, light well open northeast of the front light, for a mile, whence, keep midway between the main shore and the northwest coast of Cornwall Island, until up to the entrance to Cornwall Canal.

- 45 **Cornwall to Soulanges Canal.**—After leaving Cornwall Canal, keep midway between the north coast of Cornwall Island and the north mainland shore, for $1\frac{1}{3}$ miles, or, until St. Regis dyke southeast light is seen well open northeast of the front light, bearing 103° . These should now be steered for, one mile. Pass through the cut, with red light-buoy 96 F and two red spar buoys on the port, 50 and the dyke with its two lights on the starboard hand.

On leaving the cut, steer 62° , passing 100 yards from Glengarry Point red light-buoy 88 F. After running on this course 3.3 miles, a vessel should be abreast of Grass Island black light-buoy 87 F, which should be left 70 yards on

Chart 53.

the starboard hand, and a course steered for 1.8 miles, with Clark Island red light-buoy 84 F a little on the port, and black spar buoy 85 F opposite it, on the starboard bow.

Pass midway between these two buoys, and steer 50° for the northern of 5 three huts on Renshaw Island for half a mile, or until Stanley Island wharf is 70 yards on the starboard beam. Hence, steer 59° for a little over three-quarters of a mile, until abreast of Renshaw Island red spar buoy 82 F, leaving black light-buoy 83 F on the starboard hand. Now, haul northward and steer 54° for half a mile, until abreast of Hamilton Island light, distant 150 yards. Hence, 10 steer 46° with St. Francis Middleground light on the starboard, and Squaw Island red light-buoy 78 F on the port bow. After running on this course for 2.2 miles, a vessel should be 100 yards southeast of the latter buoy, having passed 70 yards northwest of St. Francis Middleground lighthouse, and 200 yards southeast of Highlander Shoal red spar buoy. After passing the latter, borrow 15 a little northward, to make sure of passing northwest of Horseback Shoal, with 12 feet water on it, and unbuoyed.

From the position southeast of Squaw Island light-buoy 78 F, steer 26° with Lancaster lighthouse a little on the port bow. After running $1\frac{1}{2}$ miles on this course, or until a quarter of a mile below Lancaster light, and between 20 Lancaster lighthouse and Lancaster Bar lighthouse, a 49° course should be kept for nearly $2\frac{1}{3}$ miles, with Lancaster Bar light a little on the starboard bow, until down to black spar buoy 71 F. This course will pass 250 yards northward of black spar buoy 77 F, 100 yards southeast of red light-buoy 76 F, and 250 yards southeast of red spar buoy 74 F. 25

Pass 100 yards northwest of black spar buoy 71 F, the same distance on the same side of Lancaster Bar lighthouse, and gradually turn eastward, guided by the buoys, to pass through the channel only 200 yards wide, formerly known as South Gully, steering 87° and passing between black light-buoy 69 F and red spar 70 F. On arriving 200 yards south of Island Bank red light-buoy 68 F, a 30 vessel may gradually alter course to steer 55° for St. Anicet Shoal black light-buoy, distant $3\frac{3}{4}$ miles, passing 150 yards southeast of red light-buoy 60 F; or, may keep Lancaster Bar lighthouse in line with, or a very little open south of, Island Bank red light-buoy 68 F, bearing 251° for half to three-quarters of a mile, before hauling up for St. Anicet Shoal black light-buoy, taking care not to 35 open Hamilton Island light south of Butternut Island, 232° (see page 34).

Passing 100 yards northwest of St. Anicet Shoal black light-buoy, steer with Pointe Mouillée Flats red light-buoy 48 F, a little on the port bow, 55° for $2\frac{1}{3}$ miles, or, until 200 yards southeast of that buoy. From this position, the black light-buoy 43 F, lying half a mile above an 11-foot middleground northeast of 40 Port Lewis Flats, should be seen, and kept on the starboard bow, the vessel steering 36° for 2.7 miles, or until abreast buoy 43 F, distant 250 yards.

Cherry Island light, visible on a clear night, kept well open northwest of St. Anicet Shoal black light-buoy, 225° , leads just clear of the Port Lewis Flats. In the day time, St. Zotique church in line with Hay Point, 43° leads northwest 45 200 yards of these flats.

From the last position gradually haul to the eastward to bring McKies Point light astern, steering 58° for 4.6 miles and heading nearly on red light-buoy 36 F, until that buoy is reached. Pass 150 yards southeast of red light-buoy 40 F and red spar buoy 38 F, lying south of St. Zotique, and 100 yards 50 southeast of light-buoy 36 F, when a 30° course, for seven-eighths of a mile should take a vessel to the entrance to Soulanges Canal, passing 60 yards southeast of the breakwater red light.

Chart 53.

If proceeding to the wharves at Coteau Landing, pass 100 yards east of red light-buoy 36 F, and pass 200 yards northwest of the middleground red and black horizontally-striped buoy 32 F.

- 5 If proceeding from the wharves to the canal, pass close northeast of the middleground red and black spar buoy, and 150 yards southwest of the break-water red light, and when the line of the Soulanges Canal range lights is crossed, haul up 34° , keeping a little southeast of the line of these lights, as before directed.

- 10 If bound to Valleyfield, proceed by the main channel until half a mile below Point Mouillée Flats red light-buoy 48 F, whence Grenadier Island (*see* page 24) should be kept a little on the starboard bow, the vessel steering 72° for 3.5 miles to a position about 300 yards north of that island. This course crosses the Port Lewis Flats with 10 feet water, sufficient for a vessel berthing at Valleyfield. From Grenadier Island, the course and distance to Grosse Pointe black light-15 buoy 25 F, is 48° , nearly 5 miles.

CHAPTER III

CORNWALL TO ROCKPORT AND ALEXANDRIA BAY

Chart 56A.

Dickinson Landing.—Light.—The western end of Cornwall Canal is near Dickinson Landing, where there is a wharf with over 14 feet water alongside it. On the outer end of the guard pier on the south side of Cornwall Canal, is erected a white square wooden building, which, at a height of 21 feet above the water, exhibits a *fixed red* light, visible 3 miles. (For canal signals and regulations see page xxxi).

Sheek Island, in the Province of Ontario, is situated with its northeast side nearly midway between Cornwall and Dickinson Landing, and forms part of the south side of the Cornwall Canal. It is $2\frac{1}{4}$ miles in length, and the broader and deeper water on its northern side known as **Bergins Lake** is utilized instead of the old canal north of it. Three *white* electric lights mark the north edge of the bank from Sheek Island. The villages, **Mille Roches** and **Moulinette**, a mile apart, and stations on the Canadian National Railways, occupy the main shore of this reach, the first named village having a population of about 650.

Long Sault Island, in the State of New York, extends above and below Dickinson Landing, the total length being nearly 4 miles. **Wagner** and **Grassy** Islands lie between the middle of the island and Dickinson Landing. It is separated from Sheek Island by Long Sault Rapids, through which 7 feet water can be carried.

Croil Island, in United States waters, is situated between Long Sault Island and Farran Point Canal being divided from the former by a deep water channel known as **Big Sny** with a black buoy marking the northern entrance. A bank, with 2- and 4-foot shoal spots on it, extends half a mile east from the north-east point of Croil Island.

American or South Channel.—From St. Regis Island (see page 31), a deep, unbuoyed channel passes south of Cornwall Island, between the latter and the United States shore, rejoining the main stream at the head of the island in Pollys Gut (see page 32). The International Boundary between Canada and the United States follows this channel closer to the Cornwall Island shore. On the south shore of this channel, $2\frac{1}{4}$ miles above St. Regis wharf, is the mouth of a shallow stream, called **Raquette River**. North, 500 yards from the west entrance point of the latter is a rocky shoal, with one foot of water over it, the only danger in this channel. A bridge of the New York Central Railway crosses the channel near its upper end, with a width of 360 feet between the piers of its middle span and $37\frac{1}{2}$ feet of headroom at high water level. Half a mile south of Pollys Gut is the mouth of **Grasse River**, a stream navigable for $5\frac{1}{2}$ miles to the St. Lawrence River Power Company's wharf at **Massena**, with a channel 200 feet wide and a depth of 8 to 12 feet depending upon the flow through the power house. Four and a half miles above its mouth, at Massena Center, a suspension bridge spans the river with a clearance of 51 feet. As this portion of the Grasse River is used as the tailrace for the above company's power plant, it has a current of from 3 to $3\frac{1}{2}$ knots.

Crab Island Shoal.—About half a mile east of Barnhart Island, in the middle of the river, lies Crab Island Shoal, a rocky bank with 2 feet of water on its shoalest spot.

Chart 56A.

Barnhart Island, about three miles long, and in United States territory, lies southeast of Sheek Island, separated from the latter, and also from the south bank of the Cornwall Canal by a series of rapids. South of Barnhart Island 5 and separating it from the United States mainland shore, is a narrow, winding channel about 4 miles long, 300 to 500 yards wide, and from 3 to 9 fathoms deep. In its east entrance is an unbuoyed shoal with 9 feet over it. A channel, south of the shoal with a depth of 13 feet, is marked by two daymarks on the Canadian side at lock No. 19 of the Cornwall Canal. At a sharp bend halfway up the 10 channel the south shore forms a shallow bay, known as **Robinson Bay**, with a low, marshy island situated in it. One mile above this bay, where the channel turns westward, are shoal spots under six feet in mid-channel. The upper end of the channel, between Barnhart and Long Sault Islands, becomes the foot of the Long Sault Rapids. Throughout its length the current is swift, and it is 15 used by light draught vessels running the above rapids, but should not be attempted without a pilot, or long acquaintance with the river.

An aerial cableway crosses the channel south of Barnhart Island from the southeast point of that island to the south shore. The minimum vertical clearance is 52 feet under the carriage and 65 feet under the cable.

20 At the foot of Long Sault Island the channel just described is joined by another which flows south of the above island from the Big Sny Channel at its head, (*see* page 37). It is known as **South Sault Rapids**, has depths of 8 feet and less, narrows in places to a width of only 100 yards, and a $5\frac{1}{2}$ -knot current makes it unfit for navigation. Two-thirds of a mile east of its upper end is 25 situated the head of the Massena Power Canal, where a submerged weir is built across the channel just below the entrance to the canal.

Massena Power Canal.—A wing dam extends from **Talcotts Point**, a projection of the south shore at the extreme head of the South Sault Rapids Channel, which, with a number of cribs, obstructs the greater part of the passage 30 here, leaving only a dredged channel, 150 feet wide and 14 feet deep, by the aid of which vessels can make the entrance to the Massena Power Canal. There is a swift current across the head of this channel and care must be taken to prevent vessels intending to enter it from being carried past. The canal is navigable and leads for $2\frac{3}{4}$ miles to Massena, having a width of 210 feet at the water line, a 35 least depth of 20 feet, a current of 3 knots, and minimum headroom to 50 feet under the lowest of the three bridges crossing the canal.

Richards Landing, $1\frac{1}{2}$ miles above the head of the Massena Canal, has a wharf with about 10 feet of water. The water close to the shore is deep and when approaching the dock there is an eddy to be guarded against.

40 **Cat Island**, in United States waters, two-thirds of a mile long, is separated from the southwest extremity of Croil Island by a channel 150 yards in breadth.

Buoy.—A black spar buoy marks the bank extending 250 yards from the northwest side of the island.

Vessels westward bound, and not using Farran Point Canal, pass through 45 Big Sny, between Croil and Long Sault Islands, and between Cat and Croil Islands.

Delaney and Archibald Shoals.—Delaney Shoal, with a depth of 13 feet over it, lies 200 yards off Dawson Point. Archibald Shoal, half a mile farther westward, has a least depth of 9 feet, rock bottom, but this spot lies well inside 50 the light-buoy.

Chart 56A.

Light-buoys.—Each shoal is marked by a red cylindrical light-buoy showing a *flashing red* light and numbered 6 U and 8 U.

Buoy.—**Maxwell Shoal** lies nearly in mid-channel almost one-half mile above Archibald Shoal light-buoy. It is an isolated spot with 14 feet least depth, close to the shorebank extending from the northeast point of Croil Island. A black spar buoy is moored on the north edge of the shoal.

Farran Point Village, with a population of about 400, is situated at the lower entrance to the canal of that name, and is a station on the Canadian National Railways, being distant from Montreal 82, and from Kingston 93 miles.

Buoy.—In the 3 miles of natural water between the northeast point of Croil Island and the lower entrance to Farran Point Canal, the shores (especially the Canadian shore) are fairly clean, only one red spar buoy No. 38 being placed off the Canadian shore, here known as Graveyard Point, three-quarters of a mile from the canal entrance.

Graveyard Point light.—From a lantern on a pole, situated on the shore, three-quarters of a mile below Farran Point Village, a *fixed white* light is shown at a height of 40 feet, visible 11 miles.

Current.—The rate of the current in the channel north of Croil Island is about 3 knots, and, in Farran Point Rapids, the rate is 7 to 8 knots.

Farran Point Canal.—The lower entrance to this canal is distant from the entrance to Cornwall Canal at Dickinson Landing, 5 miles by the natural channel, with 5 to 7 fathoms water. This canal overcomes Farran Point Rapids west of Croil Island, but which are navigated by all eastern or downbound vessels, there being plenty of water by keeping near the canal embankment. The length of the canal is $1\frac{1}{4}$ miles, the lockage being done by either of two locks side by side, at the lower end. The newer, and western, lock is 800 feet long, and 50 feet broad, with 16 feet water on the sill. The older lock has the same breadth, but the length is only 200 feet, and depth on sill, 9 feet. The lockage, or difference of level between the surface of the river at the ends of the canal, is $4\frac{1}{4}$ feet. (For 30 signals, details, and regulations, see pages xxiii and xxxi.)

Light-buoy.—For the benefit of vessels proceeding eastward through Farran Point Rapids, a red cylindrical light-buoy, 40 U, showing a *flashing red* light, is moored 150 yards southeast of the upper entrance of the canal, and vessels pass southeast of it.

Buoy.—A red spar buoy lies 150 yards west of the entrance of the canal, and must be left on the port hand, in entering the canal from the southwest.

Caution.—Risk of collision.—Eddy.—Vessels using the canal in ascending, generally keep close to the northwest coast of Croil Island, to avoid the strength of the current, which is quite 3 knots. In doing this, it is not easy to see, or be seen by, a downbound vessel; caution should therefore be exercised to avoid collision. A vessel unbound should cross to the main shore in time to take the canal end on, taking care to check down in time, as a strong eddy runs towards the canal entrance.

Steen Island in Canada, half a mile long and 400 yards wide at its south-west end, lies close to the Canadian shore, abreast Aultsville, its eastern point being three-quarters of a mile above the entrance to Farran Point Canal.

Aultsville, on the north shore opposite Steen Island is a station on the Canadian National Railways. There is a small wharf, 52 feet long, jutting out into the river 60 feet, with 15 feet of water at the outer face.

Chart 56A.

Ferry.—During the season a ferry plies between Aultsville and Louisville Landing, N.Y.

Buoys.—The channel to Aultsville wharf is marked by a red spar buoy 5 off the south end of the shoal about 1,700 feet east of the wharf, and by a black spar buoy on the south side of the channel a little above the lower end of Steen Island.

Light-buoy.—A red cylindrical light-buoy, 44 U, showing a *flashing red* light, lies 300 yards northeastward of the south point of Steen Island.

10 **Shoal.—Buoyage.**—A shoal, with a least depth of 13 feet, rock, lies 250 yards south of the south point of Steen Island; it is marked by a black spar buoy.

Sturgeon Shoal, with less than 6 feet of water over it, extends a quarter of a mile from the south shore, one-half mile westward of the south point of Steen Island.

15 **Buoy.**—A black spar buoy, 45 U, is moored at the extremity of the reef.

Weaver Point, on the north shore, is situated $2\frac{1}{3}$ miles westward from the south point of Steen Island, the shore immediately east of Weaver Point forming a bight. From the shore between the latter and Steen Island, a shallow bank extends off, 200 yards. The village a little back from Weaver Point is known as
20 **East Williamsburg.**

Light-buoy.—A red cylindrical light-buoy, 50 U, about 100 yards from the point and showing a *flashing red* light, marks the south end of this bank off Weaver Point.

Chart 56B.

25 **Bradford Point**, on the south shore, is situated $4\frac{1}{3}$ miles westerly from Louisville Landing, the shore being indented by three principal bays, one of which, three-quarters of a mile east of Bradford Point, contains two small islands. The eminence, a little back of the point, is known as **Bradford Hill.**

Prunner Shoal.—Buoys.—The projection of the north shore, half a mile 30 west of Weaver Point, is named **Cook Point**, and, from the shore, for one mile westward of Cook Point, a shallow rocky bank extends 300 yards. This shoal is marked by two red buoys, the eastern being a red spar buoy, 52 U, off Cook Point, and the western a red cylindrical light-buoy, 54 U, showing a *flashing red* light, a quarter of a mile farther upstream. Another red spar buoy is 35 moored abreast the lower end of Crysler Island.

Current.—The rate of the current in this locality is about 3 knots.

Crysler Island of the United States, lying rather nearer the southeast shore, is a third of a mile long northeast and southwest by a quarter of a mile in breadth, its eastern side being 1.3 miles above Weaver Point.

40 **Bank.—Buoy.**—A bank extends 500 yards easterly from the east side of Crysler Island; the northeast extreme is marked by a black can buoy.

Strawberry Island, 350 yards southwest of Crysler Island, has a bank, extending from its southeast extreme.

The passage south of Crysler and Strawberry Island is not used by heavy 45 draught vessels.

Chart 56B.

Goose Neck Island, in United States waters, $1\frac{1}{2}$ miles in total length, and three-quarters of a mile in breadth, has its eastern side separated from Strawberry Island by a channel suitable for vessels of light draught.

Light-buoys.—The east end of the bank from the northeast point of Goose Neck Island is marked by a black buoy, 67 U, showing a *flashing white* light; and, another black buoy, 69 U, also showing a *flashing white* light, marks the edge of the bank extending north from the northwest side of the island.

Jackass Shoal.—Buoys.—This shoal with 5 feet of water over it is 300 yards from the Canadian shore half a mile southwesterly from the northwest point of Goose Neck Island. On the east side of the shoal is moored a red cylindrical light-buoy, 72 U, showing a *flashing red* light; 170 yards northward of 72 U, a black spar buoy marks the northeast edge of the shoal, and 350 yards westward of 72 U, a red spar, 74 U, marks the edge of the bank extending from the Canadian shore. A depth of 9 feet can be carried between 15 Jackass Shoal and the Canadian shore.

Doran Point lies $1\frac{3}{4}$ miles southwest of the northwest point of Goose Neck Island and three-quarters of a mile northeast of the Morrisburg entrance to Rapide Plat Canal. Marking the southern edge of the bank with 3 feet of water on it, extending 300 yards from this point, is a red light-buoy, 82 U, showing a *flashing red* light; 300 yards westward of 82 U is moored a red spar buoy, also indicating the south edge of the shorebank.

Current.—The current abreast of **Doran Island**, and between it and Morrisburg, has an estimated rate of 5 knots.

Morrisburg, which, in 1941, had a population of 1,558, is situated at the eastern entrance to Rapide Plat or Morrisburg Canal and, is distant, by the natural channel, $9\frac{1}{2}$ miles from the western entrance to Farran Point Canal.

This, the deeper, channel, passes northward of Crysler, Strawberry, Goose Neck, and Doran Islands. On the Canadian side, half a mile and $1\frac{3}{4}$ miles respectively westward from Cook Point, are two bays into which flow small streams. From the western one, known as **Cook Bay**, the shore runs straight southwesterly 3 miles to Doran Point. Close westward of this point is the mouth of a creek.

Morrisburg is a station of the Canadian National Railways, distant from Montreal and Kingston, thereby, $92\frac{1}{2}$ and $82\frac{3}{4}$ miles, respectively, and on the main highway bordering the St. Lawrence River. A ferry steamer runs between Morrisburg and Dry Island, New York State.

Wharf.—The Government wharf has a landing head 90 feet long and face 40 feet in length; along the face is a depth of 15 to 17 feet and in the berth on the west side, 90 feet long, a depth of 9 to 10 feet.

Ogden Island, in the State of New York, is $2\frac{1}{2}$ miles in length, the middle portion being two-thirds of a mile in breadth. Its southwest end is situated a third of a mile above the upper entrance to Rapide Plat Canal, and, its lower end reaches to within a mile of Morrisburg. Between Bradford Point (see page 40) and the lower end of Ogden Island, the United States shore is broken up into several points and bays, that south of the southeast extremity of Goose Neck Island being known as **Cole Creek**. The streams $1\frac{1}{2}$ miles and two-thirds of a mile below Ogden Island, are named, respectively, **Brandy** and **Little Sucker Brooks**. Between Goose Neck and Ogden Island are six other islands, named, from the northeast, **Indian**, **Doran** (see above), **Murphy**, **Dry**, **Clark**, and **Canada** Islands. The last lies three-quarters of a mile southwesterly from

Chart 56B.

the lower entrance of Rapide Plat Canal, and 300 yards south of the canal bank. Indian and Doran Islands, in Canadian waters, lie one-quarter and one-half mile, respectively, west of the south point of Goose Neck Island, the ship channel being north of them.

A small unbuoyed shoal with 5 feet water over it lies 350 yards northeast of Doran Island.

The northwest coast of Ogden Island is shallow, a bank with only 4 feet water on it, known as **The Shelves**, extending two-thirds of the way across the ship channel at the distance of a little over half a mile below the upper entrance to Rapide Plat Canal. To avoid this, downbound vessels must keep the canal embankment close aboard.

Leishman Point lies close west of the upper end of Ogden Island, the St. Lawrence River, here, being a quarter of a mile wide, and the navigable channel about half that width.

Waddington is separated from Ogden Island by a shallow, bridged and dammed channel, named **Little River**. It is 2 miles east of Leishman Point. A quarter of a mile below Waddington is a stream named Great Sucker Creek. There are two landings for light draught boats, one on Ogden Island at the end of the upstream side of the bridge, and the other about a mile below the dam. The channel to the landing above the bridge is narrow and from the head of Ogden Island to abreast the landing will accommodate boats drawing 4 to 5 feet of water; it has neither lights nor buoys. The lower wharf has an approach from the main channel of the river at Dry Island, allowing the landing of boats drawing 14 feet of water; it is marked by three red spar buoys. Just west of the lowest buoy is a spot with only one foot of water over it.

Rapide Plat, or Morrisburg Canal, with its northeast entrance at Morrisburg, is $3\frac{2}{3}$ miles long, has a lock at each end 270 feet long and 45 feet broad, and a depth of 14 feet on the sills. The lockage, or difference of level of the river at each end of the canal, is $11\frac{1}{2}$ feet. Vessels proceeding northeast, or down the river, do not, if the water level is good, use the canal, but run the natural channel in the rapids between Ogden Island and the canal embankment, keeping close to the latter, the coast off the central portion of Ogden Island being shallow. The fast, shallow draught boats stem these rapids, when westbound. Local pilots are necessary for this.

Light.—A *fixed red* light is shown from the end of the pier at the upper entrance to the canal.

Iroquois, at the northeast, or lower entrance to Galop Canal, had, in 1941, a population of 942, and is 4 miles southwest of the upper entrance to Rapide Plat Canal. It is a station on the Canadian National Railways. Boats drawing 5 feet can touch at the dock below the locks.

Light.—On **Robertson Point**, a mast at a height of 25 feet above the water shows a *fixed red* light, visible 4 miles.

Pinetree Point, situated between the Rapide Plat and Galop Canals, is the most prominent projection on that shore. Two creeks discharge into the bight between Pinetree Point and Iroquois, and a bank makes off 400 yards.

Light.—On **Pinetree Point** a mast, at a height of 25 feet above the water, exhibits a *fixed red* light, visible 4 miles.

Current.—At Pinetree Point, the current runs with a rate of about 50 knots.

Chart 56B.

Point Rockway, on the United States shore, is situated opposite the lower entrance to Galop Canal, the banks from either side being separated by an unbuoyed channel, with depth over 20 feet. Point Rockway is distant 3 miles southwesterly from Leishman Point. Off the shore of the bay half a mile southwest of the latter point, a bank, with 4 feet water on it, stretches a quarter of a mile. 5

Anchorage.—Between **Waddell Point** (on the United States shore, abreast Pinetree Point), and Rockway Point, there is good anchorage out of the current.

Galop Canal.—The lower or northeast entrance to this canal is at Iroquois Village, the canal being built to overcome the rapids at Iroquois Point, Cardinal, and the Galop. The length of the canal is $7\frac{1}{2}$ miles, length and breadth of locks, 270 and 45 feet, respectively, with a depth of 14 feet on the sills. The lockage, or difference of level of the river surface at each end of the canal, is $15\frac{1}{2}$ feet. Vessels proceeding to the northeast, or, down the river, use the natural 15 channel from the foot of Galop Rapids, leaving the canal by the lock No. 28, abreast the upper lock for southwest bound vessels, and three-quarters of a mile below Galop Canal light (*see* page 44). The northwest side of the canal, between Iroquois and Cardinal, is marked by red spar buoys.

Iroquois Point is situated on the Canadian side, three-quarters of a mile 20 southward from the lower entrance of Galop Canal, the latter, half a mile back, having changed the former peninsula to an island.

Toussaint Island, with **Presqu'île** close northwest of it, lies a mile above Iroquois Point, the canal having also made an island of Presqu'île.

Buoy.—On the southeast side of Toussaint Island, a bank with depths 25 under 12 feet, extends nearly 400 yards and is marked by a red conical buoy.

Sparrowhawk Point, in New York State, lies 600 yards southwest of Toussaint Island, the channel for vessels bound down passing between them. The United States shore between Rockway and Sparrowhawk Points forms a deep bight, from the northeast part of which, abreast **Tilden Village**, a shallow bank 30 extends nearly a quarter of a mile, and is not buoyed.

Cardinal, with a population of 1,633 in 1941 is situated on an island formed by the Galop Canal, which skirts its north side. The old canal, which passed south of Cardinal, is now used as a harbour and landing place for vessels drawing not more than 8 feet. In 1917 the area in front of the Canada Starch Company's 35 wharf and channel to the main river channel were dredged to a depth of 14 feet.

Frazer Shoal, awash in places, is an isolated bank, a third of a mile long northeast and southwest, by 400 yards wide, lying northwestward of the ship channel, and half a mile northeast of Cardinal.

Buoy.—The southeast extremity of Frazer Shoal is marked by a red conical 40 buoy, lying 49° , distant 0.8 miles from the entrance to Cardinal Harbour.

Chart 57.

Galop Island is the central and largest of the group belonging to the United States, extending from Cardinal to the upper entrance to North Channel (*see* below), the rapids, having the name of the island, running between its 45 northern coast and the canal embankment. The eastern of the eight islands northeast of Galop Island is named **Lotus**, and, the western, **Dixon Island**.

Chart 57.

Current.—In the Galop Rapids, the rate of the current is estimated to be 9 knots. The canal was constructed to enable vessels ascending the river to pass the Galop Rapids. Descending vessels run the rapids safely, except at extreme low stages of water in the river, when downbound vessels of full canal draught must use the canal.

Buoy.—Marking the edge of a shallow bank extending 200 yards northward from Dixon Island, is a black spar buoy 127 U.

The shallow channel southeast of Galop and the islands above mentioned is termed the **American Galop Rapids**.

Adams Island, in Canada, a quarter of a mile long, northeast and southwest, is situated between the northwest extreme of Galop Island and the upper entrance to Galop Canal. A dam is built across **The Gut**, the narrow passage separating Galop and Adams Islands.

15 **Light.**—**Head of Galop Canal.**—The upper entrance to Galop Canal is 300 yards north of Adams Island, and on the shore abreast the upper entrance to the canal a *flashing red* light is shown, at an elevation of 14 feet, from a lantern on a small red skeleton tower. The light is unwatched.

Buoys.—Westward from the canal entrance, and northward of Adams Island, are placed two red buoys 138 U and 142 U, both showing *flashing red* lights; three red spar buoys 134 U, 136 U, and 140 U, and two black spar buoys 139 U, and 141 U. Vessels from the canal to North Channel (see below) pass northward of the latter, and south of the light-buoys 138 U and 142 U, and the red spar buoys.

25 **North Channel dykes.**—**Light.**—Two-thirds of a mile southwest of the canal entrance are built two cribwork piers, or dykes, each 500 feet long, and, between which, is the channel. On the angle of the northwestern dyke is erected a white structure carrying a *fixed red* light at a height of 26 feet above the water, visible 4 miles.

30 **Buoy.**—A black spar 143 U is moored a quarter of a mile below the above light.

Current.—Between the dykes and in North Channel, the rate of the current is about 3 knots.

North Channel.—Southwestward of Galop Island is a group of islets, the northwestern two being known as **Drummond** and **Spencer Islands**, in Canadian waters. The southwestern one of the group, belonging to the United States, is named **Chimney Island**. North Channel, a cutting 300 feet wide and 16 feet deep passes between Drummond and Spencer Islands; also between **Duck Island** and **Tuttle Point**. The length of this channel, including North Channel dykes, is $2\frac{3}{4}$ miles.

Lights.—On each revetment wall, on the north and south sides of North Channel, and near the upper end of the dredged cut is erected a red, steel, skeleton tower that from a height of 12 feet exhibits a *fixed* light, visible 4 miles; the light on the north wall is *red* and that on the south wall *white*. The lights are unwatched.

From the southern end of Spencer Island, a pier extends in a general southwest direction half a mile, the channel being close southeast of this pier. On the outer end of the pier is shown from a white structure, a *fixed white* light at a height of 26 feet above the water, and visible 12 miles. This unwatched

Chart 57.

light is visible from all points of approach. A spot light has also been placed to illuminate the end of the pier.

At the bend of the pier, a red, steel, skeleton tower shows, at a height of 12 feet, a *flashing red* light visible 4 miles. The light is unwatched. 5

Buoys.—Between North Channel dykes and North Channel, the passage is marked by two red, and two black spar buoys. On the southeast side of North Channel, opposite the upper entrance pier, are moored three black spar buoys.

Current.—Caution.—Near the lighthouse at the outer end of the pier, a strong current sets eastward of the course and must be carefully guarded against 10 especially, with a tow of barges.

Buoy.—A bank extends three-quarters of a mile northeasterly from Chimney Island.

Chimney Point is a prominent projection of the United States shore, situated a third of a mile south of the upper entrance to North Channel. The 15 two miles of shore between Galop Island and Chimney Point form a bight, into which a creek flows, half a mile southeast of Chimney Point. The numerous and prominent buildings of the "St. Lawrence State" hospital occupy this point.

Shoal.—Buoy.—From a point southwest half a mile from Chimney Point, a shoal with 4 to 9 feet water over it extends northward half a mile, its outer 20 end being marked by a black can buoy 161U, bearing 220° distant half a mile from North Channel outer pier light.

Windmill Point, on the Canadian side, is situated $2\frac{1}{2}$ miles southwest of Spencer Island, the shore between forming a slight bight, from which a shallow bank extends, in the northeastern part, half a mile. In the middle of this bight 25 is a stream running into the river close west of **Johnstown Village**.

Lower Lakes Terminal.—In the bay east of Windmill Point about 2 miles below Prescott is located the Lower Lakes Terminal elevator. The elevator has a capacity of 5,500,000 bushels, and is a long narrow structure with unloading facilities for large lake boats on one side, and loading-out facilities 30 to canal size boats on the other side. Car loading facilities are located at the inshore end where connections have been built with the Canadian Pacific and the Canadian National Railways. The railway yard has space for about 1,200 cars.

The berth for unloading lake boats is 1,340 feet long, 250 feet wide, and 35 dredged to 24 feet. It will accommodate two of the largest sized lake boats for rapid and simultaneous unloading by means of four travelling marine towers which can reach all holds of both vessels. Each tower has a capacity of 35,000 bushels per hour on the dip. This berth will also accommodate four other boats waiting to be unloaded. 40

The slip for loading river boats is 800 feet long, 200 feet wide, and dredged to 25 feet, with berths for three boats to load and space for five boats waiting for loads.

In addition to the above, a berth has been provided for lightering canal boats, thus enabling them to load to full capacity at the upper lake ports, 45 and by discharging part of their cargo at this point reduce their draught sufficiently to pass through the St. Lawrence River Canal locks. One berth, with a marine leg having a capacity of 2,500 bushels per hour, has been reserved for lightering and will be used for no other purpose.

Chart 57.

Loading arrangements of cars consist of four elevator legs of 17,000 bushels capacity per hour loading to four tracks.

At the inshore end, cleaning facilities are provided and also a drier with 5 boiler house for treating salvaged and out-of-condition grain.

Semaphore.—A semaphore has been established on the southwesterly extreme of the elevator wharf to control the movement of vessels entering the Galop Canal from the westward.

In the event of obstructions occurring in the canal, **stop warnings** will be 10 indicated to eastbound vessels as follows:

At night.—Two *red* lights, one above the other, displayed from the mast of the semaphore, about 35 feet above the water.

In daytime.—The westerly end of the semaphore station will open to show a *red* daymark, spire shaped at top, 12 feet by 10 feet.

15 When the channel is all clear the station will show all white.

In thick weather.—When the semaphore is required during thick weather, a hand fog horn will sound *one blast every 30 seconds*.

Mariners are warned to govern themselves accordingly when approaching the Galop Canal from the westward.

20 **Light.**—Near the shore of Windmill Point stands a white circular stone building, which, from a height of 92 feet above the water, exhibits a *fixed white* light, visible in clear weather a distance of 17 miles.

Buoy.—Marking the edge of the bank, half a mile east of the above light-house, is moored a red conical buoy, 162 U. A black spar buoy is moored about 25 3 cables southeast of the Lower Lakes Terminal wharf to mark the north end of a shoal with a least depth of 11 feet over it.

Prescott, with a population in 1941 of 3,191, is situated on the north-west side of the St. Lawrence River, opposite the City of Ogdensburg in New York State. It is a station of the Canadian National and the Canadian Pacific 30 Railways. By the latter, Prescott is distant from Ottawa 52 miles, and, by the Canadian National Railways, it is distant from Montreal and Kingston 114 and 62 miles, respectively. A car ferry connecting the Canadian Pacific with the United States Railways, and a passenger ferry, both operating throughout the year, cross the river to Ogdensburg.

35 Steamboats run in the summer to Montreal, Kingston, Toronto, Hamilton and places between. Steamboats also call at the principal points on both sides of the St. Lawrence River, between Kingston and Montreal. Passengers change at Prescott from the larger vessels to the smaller vessels which run the rapids to Montreal.

40 **Wharves.**—There are about a dozen of these with depths alongside the principal ones ranging from 12 to 21 feet. Near the western end of the waterfront is the wharf of the Department of Transport and yard for the storage and refitting of buoys, entitled the Dominion lighthouse depot. Next below this wharf is the Government pier 210 feet long, parallel to the stream; in the 45 berth, 150 feet in length, at the lower end is a depth of $11\frac{1}{2}$ to $12\frac{1}{2}$ feet. Near the eastern end of the waterfront is the Canadian Pacific Railway car ferry slip, with 18 feet of water. Immediately east of the Canadian Pacific Railway wharf is the dock of the Canada Steamship Lines, with 16 feet of water alongside.

Chart 57.

Light.—**Prescott beacon** *fixed red* light is shown from a pole erected on the outer end of the Dominion lighthouse depot wharf, at a height of 25 feet above the water, and visible from all points of approach 7 miles.

The shore between Windmill Point lighthouse and Prescott Canada Steamship Lines wharf, one mile distant, forms a slight bight fronted by a bank extending off 300 yards.

United States chart 13.

Ogdensburg, in the State of New York, is opposite Prescott. It has a large shipping trade in grain, and extensive manufactures. It is on the New York Central and Hudson River Railway, and is connected by car ferry and passenger ferry with Prescott. The city is built on both sides of **Oswegatchie River**. Steamboats of several companies call at the principal places between Ogdensburg and Kingston. Half a mile above Ogdensburg lighthouse is the marine railway of the St. Lawrence Marine Repair Dock Corp. 736½ feet long, 15 over all, length of cradle 300 feet, width 52 feet and depth 16 feet.

Channels of approach.—Fronting Ogdensburg is a bank with as little as 2 feet of water over it, extending halfway across the St. Lawrence River and through this bank two channels have been dredged, but these, on account of the shifting character of the bank, require constant examination. 20

The westerly or upper entrance channel with a depth of 18 feet is 3,000 feet long, extending from deep water in the St. Lawrence River to the highway bridge across the Oswegatchie River; the outer 1,700 feet is 900 feet wide, while the upper 600 feet narrows to 125 feet just below the bridge.

The lower entrance, nearly a mile below the upper or Oswegatchie Channel, 25 consists of a combined channel and basin with 20 feet of water, about 3,500 feet across, at the entrance from the St. Lawrence River and extending into the elevator and freight wharves of the Rutland Railroad terminus, a distance varying from 1,600 to 2,100 feet.

The city-front channel, extending between the upper and lower entrances, is 30 close along the wharves and is from 300 to 400 feet wide with 18½ feet of water.

Lights.—On the low southwest entrance point of Oswegatchie River is erected a grey and cream-coloured stone tower, which, at a height of 63 feet above the water, exhibits an *occulting white* light, *every 10 seconds*, visible in clear weather, 16 miles. The outer end of the New York Central car ferry 35 pier, on the westerly side of the upper entrance channel, about 800 feet north of Ogdensburg light, is marked by a *fixed red* light, 32 feet above water, visible 6 miles.

Storm signals are shown from a steel tower near the middle of Caroline Street, 200 feet from North Water Street. (See page xvi.) 40

Light and other buoys.—A red conical buoy No. 2 showing a *flashing red* light is moored on the western side of the entrance of the upper or west channel of approach to Ogdensburg, 570 yards 338° from the main lighthouse. On the eastern side of the channel abreast and 450 feet from No. 2, is moored a black can buoy. Abreast the main lighthouse the dredged channel is marked by a 45 red and a black spar buoy. A black buoy showing a *flashing white* light is placed at the junction of the upper channel with the city-front channel. A black buoy, No. 1, showing a *flashing white* light marking the eastern side of the lower entrance is moored 6 cables northeastward of the outer end of the Rutland Railway wharf. A red spar buoy, marking the eastern end of the shoal fronting 50 Ogdensburg is moored a cable northward of the same point. A red conical buoy marks the north side of the city-front terminal.

United States chart 13.

Directions for Ogdensburg.—Vessels from the southwest approach Ogdensburg by the western channel, passing between the buoys, black on the port and red on the starboard hand, keeping near the latter on account of the 5 current, the rate of which is $1\frac{1}{4}$ knots.

Vessels from the northeast use the channel leading along the outer ends of the city wharves. In both channels the depth is 18 feet. (*See above.*)

Charts 56A, 56B, 57.

Directions, Cornwall to Prescott.—(For directions Soulanges Canal 10 to Cornwall, *see* page 33). Masters using this portion of the river should employ a pilot until well acquainted with local conditions. From Cornwall a vessel will take the Cornwall Canal (for regulations and signals, *see* page xxxi), and, at Mille Roches Village, will emerge into the deep water 3 miles long, northwest of Sheek Island, known by some as Bergins Lake. The southeast 15 side of this water is marked by three *white* electric lights. On arriving at Dickinson Landing, distant 11 miles from the lower entrance of the canal, a vessel will pass north of Wagner Island and south of the red light-buoys 6 U and 8 U, marking Delaney and Archibald Shoals, and, if taking the Canadian channel north of Croil Island, will keep the mainland aboard to avoid the extensive 20 shallow bank from the east point of Croil Island, passing northward of the black spar buoy moored on Maxwell Shoal.

When three-quarters of a mile below the entrance to Farran Point Canal, a vessel will pass south of Graveyard Point light and a red spar buoy, 38. The current north of Croil Island has a rate of about 3 knots. As the entrance to 25 the canal is approached, the eddy near it must be guarded against (*see* Caution, page 39). The shallow draught swift steamers ascend Farran Point Rapids. If not wishing to take the canal or the rapids, a vessel, after passing Archibald Shoal red light-buoy, 8 U, may pass through Big Sny and south of Croil Island to enter the main channel again between Croil and Cat Islands. This route is 30 half a mile longer in distance, but shorter in time for a vessel with barges in tow.

The track is now between the red light-buoy No. 44 U and the black spar buoy lying off the south point of Steen Island, thence north of the black spar 45 U marking Sturgeon Shoal.

As Weaver Point, East Williamsburg, is approached, the same side may 35 be kept close aboard, to take advantage of the slack water below this point, the current here having a rate of from 4 to 5 knots. Extreme caution and local knowledge is required for this manoeuvre. Pass southward of red light-buoy, 50 U, off Weaver Point, red spar buoy, 52 U, red light-buoy, 54 U, and the red spar buoy abreast the lower end of Chrysler Island. Vessels drawing less than 9 40 feet can pass south of Chrysler and Strawberry Islands and east of black light-buoy 67 U.

North of this buoy, the tracks again join, and a vessel may keep in mid-channel north of the latter island and the black light-buoy 69 U, near the north- 45 west point. Keeping in the middle of the channel, a vessel will haul southward, passing south of red light-buoy 72 U, marking Jackass Shoal (*see* page 41). Vessels of not over 9 feet draught may pass northwest of the black spar buoy placed on the north extremity of this shoal. A vessel will pass southeast of the red spar buoy 400 yards above Jackass Shoal, keeping midway between Doran Island and the Canadian shore, pass south of light-buoy 82 U, and red spar 50 buoy 84 U, half a mile below Morrisburg, and, so into Rapide Plat or Morrisburg Canal (*see* regulations, page xxxi). Swift, shallow-draught steamers ascend Rapide Plat.

Charts 56A, 56B, 57.

After leaving this canal, the length of which is $3\frac{2}{3}$ miles, keep nearer the Canadian shore for $2\frac{1}{4}$ miles, until above Pinetree Point, where the measured rate of the current is 5 knots, passing Robertson Point light, and Pinetree Point light on the starboard hand. Thence keep rather near the United States shore until half a mile below Iroquois Village, when the entrance to Galop Canal may be steered for. There are no buoys between Rapide Plat and Galop Canals. (For anchorage, *see* page 43.) 5

If taking Galop Canal, as all but the fastest passenger steamboats do, *see* canal regulations, page xxxi. 10

Vessels of sufficient speed to overcome the Iroquois Point and Cardinal Rapids (the estimated rate of the current in the rapids being 8 knots) pass midway between Point Rockway and Iroquois Point, hauling westward round the latter, and passing south of Toussaint Island red conical buoy. Thence, keep rather nearer Sparrowhawk Point than the west side of Toussaint Island, 15 and after rounding the former, which is steep to, the red conical buoy on Frazer Shoal may be kept a little on the starboard bow. Pass south of it, and, thence, midway between the canal embankment and the islands off the south shore. Dixon Island black spar buoy, 127 U, half a mile below the canal entrance lock is passed northward of, and the canal entered by the lift lock at the foot of Galop 20 Rapids. Vessels drawing 9 feet may enter Cardinal Harbour, the entrance to which is two-thirds of a mile above Frazer Shoal conical buoy.

On emerging from Galop Canal, a vessel has to pass south of red light-buoy 138 U, two red spar buoys east of it, one red spar west of it, red light-buoy 142 U, and northwest of three black spar buoys lying between the canal and 25 North Channel dykes. The red buoys should be given a good berth as the water is shoal immediately north of them. Pass between the two short dykes, the northwestern one being lighted, northwest of two black spar buoys, southeast of two red spar buoys and so to North Channel, which has two lights near its southwest end, and two on the pier extending from Spencer Point. On leaving 30 North Channel between Spencer and Drummond Islands, a vessel will pass northwest of three black spar buoys on the edge of Chimney Island Bank. From the light at the end of the pier from Spencer Island, steer 235° for Windmill Point light for half a mile to pass north of the black can buoy 161 U marking the dangerous bank extending from Chimney Point. If required a vessel may now 35 haul in to the wharves at the Lower Lakes Terminal.

Caution.—On emerging from North Channel, a vessel will find a strong current on her starboard bow, which must be guarded against, especially with a tow of barges.

Thence, keep Windmill Point light a little on the starboard bow, passing 40 north of the black spar buoy on the 11-foot shoal, abreast the Lower Lakes Terminal wharf, and a quarter of a mile south of a red conical buoy, 162 U, lying east of the light and marking the edge of the shorebank. Keep nearer the Canadian shore until Prescott is reached, when a vessel may berth at the wharves or continue upstream as directed on page 61. 45

If stopping at Ogdensburg, a vessel when abreast Windmill Point may haul over for the Rutland Railway wharf at Ogdensburg, and keep along outside the wharves in the channel with a depth of 18 feet, or may berth at the railway wharf. (For the western channel to Ogdensburg, *see* page 47.)

Prescott to Cornwall.—Unless locally acquainted a master of a vessel 50 should not attempt the river without a pilot. From Prescott, a vessel will keep rather nearer the Canadian shore, passing a quarter of a mile from Windmill Point light and the same distance south of red conical buoy 162 U. Mariners

Charts 56A, 56B, 57.

are warned to govern themselves, regarding entering Galop Canal, according to the signals shown by the semaphore (page 46) on the pier at the Lower Lakes Terminal. From this position North Channel pier light may be steered for, 5 taking care to pass north of the black spar buoy on the 11-foot shoal, abreast the Lower Lakes Terminal wharf and black can buoy 161 U marking the dangerous bank from Chimney Point. Enter, now, North Channel, with the long pier on the port hand, and three black spar buoys on the starboard hand. (*See Caution, page 45*).

- 10 On emerging from North Channel cut, the light at North Channel dykes will be seen a little on the port bow. Pass southeast of two red spar buoys, and northwest of two black spar buoys marking the edges of the channel between North Channel and North Channel dykes. Pass between the two short dykes and steer for red light-buoy, 142 U, passing a black spar buoy to starboard; now 15 head a little south of red light-buoy, 138 U, passing north of two more black spars and south of two red spar buoys, and then into Galop Canal.

Light draught vessels running Galop Rapids, will pass south of the light and canal, and north of Adams and Galop Islands, joining the main channel a little below the lift lock No. 28.

- 20 After a mile in the canal, a vessel will be at the lift lock No. 28 at the foot of Galop Rapids, and will leave the canal for the natural channel, passing north of Dixon Island black spar buoy 127 and in mid-channel through Cardinal Rapids, until down to the red conical buoy marking the south extremity of Frazer Shoal. Pass southeast of this buoy, and keep rather nearer the United States 25 shore, rounding Sparrowhawk Point and in mid-channel south of Toussaint Island, until abreast, and south of, its red conical buoy.

A vessel will keep in mid-channel through Iroquois Rapids, joining the common track for all vessels, north of Point Rockway abreast the lower entrance to Galop Canal. Until nearly down to Pinetree Point, keep rather nearer the United 30 States shore, and thence, in mid-channel to abreast the entrance to Rapide Plat Canal, passing Pinetree Point and Robertson Point lights on the port hand. The current between Waddell Point and Pinetree Point has a measured rate of 5 knots. (*For anchorage, see page 43*).

A vessel now continues by the natural channel, through the rapids, by keep- 35 ing the canal embankment close aboard (*see page 42*), passing north of Canada Island, and joining the common track, a quarter of a mile below Morrisburg. A vessel will now pass south of the red spar buoy and red light-buoy, 82 U, lying half a mile below Morrisburg. Thence proceed north of Doran Island, and southeast of two red buoys, one a light-buoy, 72 U, on, and the other, a spar, 400 40 yards above, Jackass Shoal (*see page 41*). A vessel drawing less than 9 feet can pass north of the black spar buoy marking the north end of Jackass Shoal. When below this danger, keep in mid-channel, passing north of black light-buoy 69 U off the northwest part of Goose Neck Island, and also north of Strawberry and Crysler Islands.

- 45 Vessels not drawing over 9 feet water, may pass between Goose Neck and Strawberry Islands, by leaving the black light-buoy 67 U off the northeast point of the former on the starboard hand. Thence, passing south of Strawberry and Crysler Islands and east of the black can buoy marking the end of the shoal off Crysler Island, joining the main channel off Bradford Point. A vessel passing 50 north of Crysler Island will pass south of a red spar buoy, a red light-buoy, 54 U, marking the edge of the dangerous Prunner Shoal, a red spar buoy off Cook Point, and the red light-buoy, 50 U, off Weaver Point.

Charts 56A, 56B, 57.

From Weaver Point, keeping rather nearer the Canadian shore to avoid Sturgeon Shoal, marked by a black spar buoy, pass southeast of Steen Island red light-buoy, 44 U, northward of the black spar off the south of Steen Island and also northward of Cat Island black spar buoy. The current between Crysler Island and this point has an estimated rate of 3 knots. Vessels, now, take the Farran Point Rapids between the canal embankment and the northwest coast of Croil Island, passing southeast of red light-buoy, 40 U, at their upper end. (See Caution, page 39.)

There is a deep passage also south and east of Croil Island for which see 10 page 37. From abreast the lower entrance to the canal, keep in the middle of the channel north of Croil Island, passing Graveyard Point light and red spar buoy, 38 U, on the port hand, and, taking care, as Archibald Shoal red light-buoy, 8 U is approached, to keep north of the large bank extending half a mile from the northeast extremity of Croil Island, and northward of the black spar buoy moored 15 on the edge of Maxwell Shoal, 600 yards northeast of Croil Island. Pass south of light-buoys 8 U and 6 U, marking Archibald and Delaney Shoals, and enter Cornwall Canal at Dickinson Landing. For Bergins Lake, see page 37. For directions, Cornwall to Soulanges Canal, see page 34.

Current.—The current north of Croil Island, has an estimated rate of 3 20 knots.

Light draught passenger vessels run the Long Sault Rapids, passing south of Sheek and Barnhart Islands, northward of the dangerous Crab Shoal, unbuoyed, northward of Cornwall Island, and joining the main channel again at the lower entrance to Cornwall Canal. 25

Ship Channel.—Extensive improvements, carried out by the Governments of Canada and the United States, between Prescott and the head of the river, have provided a good channel for large vessels. Shoals were removed to a depth of 25½ feet to widen and straighten the courses in this section of the river. Details are given in the following pages. 30

Chart 57.

Little Church Bay.—The Canadian shore of the St. Lawrence River, from Prescott, trends southwesterly 2½ miles to the pier on the northeast entrance point to Little Church Bay. From the upper portion of this bight a bank with less than 12 feet on it extends 400 yards. 35

Maitland, a small village with wharf, and a station on the Canadian National Railways, stands on the shore, nearly 7 miles southwestward of Prescott. With the exception of a small bay one mile northeast of Maitland, the shore between it and Little Church Bay is fairly straight, as is, also, the edge of the shorebank. 40

Morristown Point, on the United States side, is 9½ miles southwestward of Ogdensburg, the shore between running nearly straight, with the offshore bank, nowhere extending more than 300, and, usually, not more than 150 yards from the shore. There is a pier on Morristown Point, and the land is occupied by Edgewater and Terrace Parks. The slight indentation half a mile east of Morris-town Point is known as **Perch Bay**. The New York Central and Hudson River Railway runs close to the shore between the point and Ogdensburg. 45

A spot, with 5 feet over it, lies, on the edge of the shorebank, a cable north of Morristown Point.

Chart 57.

Catamaran Shoal, an isolated patch with 12 feet over it, lies $1\frac{1}{4}$ miles northeastward of Morristown Point; it is marked on its north side by a black can buoy.

- 5 **Aspect**.—The shores of the deep and broad portion of the St. Lawrence River between Prescott and Brockville are park-like, the partly settled land half a mile back rising to a height of 50 to 80 feet, the United States side being slightly higher.

Morristown, in the State of New York, is situated close northeast of a narrow indentation named **Morristown Bay**, and a mile southwest from Morristown Point. It is a station of the New York Central and Hudson River Railway, the wharf of which, at the mouth of Morristown Bay, has a depth of 14 feet. The land, a little above the town, rises to a height of 120 feet.

Ferry.—A ferry plies between Morristown and Brockville.

15 Chart P2043.

Brockville, Ontario, is situated on the north shore of the river, the Canadian Pacific Railway wharf being distant $11\frac{1}{2}$ miles southwestward of Prescott lighthouse. The $4\frac{1}{2}$ miles of shore between Maitland and Brockville is fairly straight, the bank nowhere extending off more than 200 yards. Brockville had, in 1941, a population of 11,170, and, for the year 1917, the value of its manufactures was \$4,601,596. It is a station of the Canadian National and Canadian Pacific Railways, being distant from Ottawa by the latter 78 miles. From Montreal and Kingston it is distant, respectively $125\frac{1}{2}$ and $49\frac{3}{4}$ miles. By steamboats, Brockville has, during the summer, daily connection with Montreal, Kingston, Toronto, Hamilton, and other places between. The asylum buildings, with a spire, three-quarters of a mile northeast of Brockville, stand on land 140 feet high, and are conspicuous. Brockville is on the main St. Lawrence motor highway, and from this point a principal highway leads to Smiths Falls.

- 30 The total frontage of the wharves is about 2,000 feet with depths of from 6 to $18\frac{1}{2}$ feet. At the upstream end of the harbour are the ruins of the upper Canadian Pacific Railway wharf. Next is the dock of the Central Canada Coal Co., 60 feet in width. The berth at the end of the dock was dredged in 1930 to a depth of 19 feet. Immediately below this dock are the docks of the Canada Foundry and Forgings, Ltd., and R. H. Smart. In 1935 the berth in front of these two docks, 450 feet in length, was dredged to 18 feet. *A rock, with 15 feet of water over it, lies 50 feet out from the face of the dock and 50 feet downstream from the southeast corner of Smart's dock.* The Canadian Pacific Railway dock, used by the Canada Steamship Lines, lies on the east side of Blockhouse Island (now joined to the mainland). In 1935 the berth at this wharf, 450 feet in length was dredged to $18\frac{1}{2}$ feet. The Government wharf, extending west from Blockhouse Island, is 467 feet long with a depth of 12 feet alongside. Below the Canadian Pacific Railway dock are the wharves of the W.B. Reynolds Coal Co., Ltd., the Laing Produce and Storage Co., and J. R. Bresnan and Co. The 45 dock of W. B. Reynolds Coal Co., Ltd. is 245 feet long with a depth of 15 feet of water; that of the Laing Produce and Storage Co., Ltd. is 300 feet long with 6 to 11 feet of water and that of J. R. Bresnan and Co. is 225 feet long with from 12 to 18 feet of water.

50 **Buoys**.—Two red spar buoys mark the edge of the shorebank near the south end of the wharf on Blockhouse Island. A white spar buoy moored a quarter of a mile below the Government wharf marks the Brockville intake pipe; vessels should give this buoy a wide berth, and should not anchor in its vicinity.

Chart P2043.

A red buoy moored near the outer end of the upper Canadian Pacific Railway wharf marks a shoal spot off this wharf. A black spar buoy marks the south side of a crib placed by the Eugene F. Phillips Electrical Works (Ltd.), about 500 feet west of Victoria Island and 200 feet offshore, just above Brockville. 5

Ferries ply between Brockville and Morristown, New York, and between Brockville and Waddington, New York. A channel, 8 feet deep, has been dredged to the Brockville-Morristown Transportation Company's terminal at the foot of Home Street.

McNair Islands, three in number, lie in the middle of the river, three-10
quarters of a mile below the Canadian Pacific Railway wharf. The northwestern and largest McNair Island is about 15 feet high, and on its north point, are still standing the buttresses of a proposed bridge across the river. The smaller two islands are bushy, and about 10 feet high. The Canadian shore abreast these islands is cliffy, 20 feet high, and surmounted by handsome villa residences. 15

McNair Island light.—On the old bridge pier on the north extreme of McNair Island a white steel superstructure at about 30 feet above the water shows a *flashing white* light. This light is unwatched.

North McNair Shoal, a rock with 13 feet of water on it, lies 270 yards northwest of the largest McNair Island, and has a passage on either side, although 20 the usual track is southeast of the buoy.

Light-buoy.—A red steel cylindrical buoy showing a *flashing red* light is moored in 31 feet of water on the south side of North McNair Shoal, 675 feet, northward of McNair Island light.

Point Comfort.—From **Chapman Point** of Morristown Bay, the New 25
York shore runs southwesterly to **Holmes, Delack** and **Comfort Points**, distant, therefrom $1\frac{1}{2}$, $2\frac{1}{2}$, and $3\frac{1}{2}$ miles, respectively. The indentation, a third of a mile northeast of Holmes Point, is named **Eager Bay**, a third of a mile northwest of which is **Old Man Island**. Northward 400 yards from this island is the north side of an extensive patch of rocks, some of which are above water, 30 collectively known as **Brockville Rock**.

Between Holmes and Delack Points, the shore is almost joined to the north-eastern end of Brock Group of islands by extensive banks having as little as 6 feet water over them. The water between Brock Group and the United States shore is full of shoal patches. This portion of the southeast shore is from 40 to 35 80 feet in height.

Oak Point, on the same side, is situated $3\frac{1}{2}$ miles southwesterly from Point Comfort, the shore between, 80 feet high, being straight excepting for a small bay about midway between these points. The southwest point of this bay is named **Birch Point**. Landing can be had at Oak Point wharf, by boats drawing 40 less than 6 feet.

Oak Point Shoal, with 16 feet of water over it, lies 5 cables southwest of Cole Shoal old light-tower and 3 cables off the United States shore.

Lily Bay.—From Brockville, the northwest shore of the river runs, irregularly, over 3 miles to the northeast side of Lily Bay, and midway between, a 45 stream discharges close northeast of **St. Lawrence Park**. South of the latter, and $1\frac{1}{2}$ miles from Lily Bay, is a projection of the mainland known as **McDonald Point**, 100 yards east of which is **McDonald Point Shoal** with 8 feet water on it.

Chart P2043.

The channel between this portion of the shore and Brock Group of islands is named Brockville Narrows, 150 to 300 yards wide, and through which the rate of the current is from $2\frac{3}{4}$ to $3\frac{1}{2}$ knots.

- 5 **Thousand Islands.**—The stretch of river between Brockville on the northeast and Cape Vincent on the southwest is thickly strewn with islands, large and small, with deep water channels between, known as The Thousand Islands.

Brock Group is the name given to a cluster of islands under various names, 10 occupying the middle of the river between Brockville and Lily Bay. The northeastern of the group south of Brockville Narrows is called **Conran Island**, and is in Canadian waters. That, at the upper end, southeast of the International Boundary, is known from this circumstance as **American Island**.

Brockville Narrows is the ship channel, $2\frac{3}{4}$ miles long, stretching from a 15 short distance above Brockville to Lily Bay, and separating Brock Group from the main shore. This section is the narrowest part of the Canadian portion of the improved ship channel and varies in width from 500 to 600 feet. It is practically straight, and the north edge of the channel runs close up to Skelton, Royal and Needles Eye Islands lights.

- 20 **Skelton Island** is the largest of a group of four islands lying 350 yards from the Canadian shore three-quarters of a mile above the Government wharf, Brockville.

Lights.—Skelton Island.—A lantern on a red, square steel skeleton tower on the southeast end of Skelton Island exhibits at 31 feet above water a 25 *flashing red* light, visible 10 miles from all points of approach. This light is unwatched.

Royal Island.—On a small shoal immediately west of Royal Island is erected a white concrete pyramid, that at a height of 10 feet exhibits a *flashing red* light, visible 4 miles. The light is unwatched.

- 30 **Needles Eye Island.**—On the southeast point of the island a *flashing red* light is shown, at an elevation of 20 feet, from a lantern on a red skeleton tower. The light is unwatched.

At **Fernbank**, inside Needles Eye Island, is a shoal with $3\frac{1}{2}$ to 5 feet of water over it, and marked by a pier built just outside the shoal.

- 35 **McCoy Island** lies next west of Conran Island and the south edge of the ship channel passes close up to the former, the shoal formerly making off the island having been removed.

Light-buoys.—On the north side of the eastern extremity of the shoal, making off northeasterly from Conran Island, and south of Skelton Island light 40 is moored a black steel cylindrical light-buoy showing a *flashing white* light.

On the north edge of McCoy Shoal, a cable south of Royal Island light, is moored a black cylindrical light-buoy showing a *flashing white* light.

Coronation Shoal with 6 feet of water on it lies north of the channel $3\frac{1}{4}$ cables above Royal Island light. On the south side of this shoal, 3 cables south- 45 west of Royal Island light is moored a red steel cylindrical light-buoy showing a *flashing red* light.

Cockburn Island lies a third of a mile above McCoy Island, and the edge of the dredged channel passes about 75 feet off the island.

Chart P2043.

Sparrow Island lies on the south side of the channel abreast Needles Eye Island, the edge of the channel being close up to this island and also to **Stovin Island** lying immediately northeast of Sparrow Island.

Hillcrest Shoal (removed in 1931), consisted of two spots with 4 and 17 5 feet of water on them lying half a mile above Needles Eye light. This area is included in the improved channel and there is now 25½ feet of water.

De Wattville leading lights.—The front light is shown from a white square wooden structure on De Wattville Island at 30 feet above the water, visible 12 miles. The back light, on the mainland 1,200 feet 37° 35' from the 10 front light, is shown from a red steel skeleton tower at a height of 70 feet, and is visible 17 miles. The lights are *fixed white*. The back lighthouse is not visible in line of range, a part of the watchroom and lantern only being seen over the tops of the trees.

Whitney Point.—From the bottom of Lily Bay, the Canadian shore runs 15 in the same general direction, 2¾ miles to a broad point at **Butternut Bay**, 80 feet high, on which is situated **Union Park**, having a small landing wharf. Thence, the shore keeps the same direction 2 miles farther to Whitney Point, the light in the last stretch being flanked by a chain of islets lying in front of **Jones Creek**, the mouth of which is three-quarters of a mile northeast of Whitney Point. The land a little inside this point rises to a height of 80 feet.

A mile above Whitney Point is **Patterson Bay**. Whitney Point (sometimes known locally as **Sifton Point**) has a large residence and prominent water tower showing above the trees.

Light-buoys.—An isolated spot with 15 feet of water on it lies close south 25 of the channel, 3½ cables above De Wattville front light. This shoal is marked by a black steel cylindrical light-buoy showing a *flashing white* light.

Shoal Patches, in the middle of the river, extend nearly a mile southwest of Brock Group. A black spar buoy is moored on the west side of the upper spot, known as **Cole Ferry Shoal**, one mile southwestward of De Wattville 30 front light.

A red light-buoy, showing a *flashing red* light, marks a 12-foot spot 2 cables southwest of the abandoned lighthouse on **Cole Shoal**, which is situated 1½ miles above De Wattville Island. On the south side of the channel a black light-buoy, showing a *flashing white* light, marks a shoal, with 8 feet over it, 35 located nearly three-quarters of a mile south of the same structure.

Chart 57.

Union Park Shoal, with 5 feet over it, lies 170 yards easterly of Union Park wharf, which is located 1½ miles above Cole Shoal abandoned lighthouse. A patch, with 8 feet over it, lies 200 yards southeast of the northeastern islet 40 of the group lying off Jones Creek, 1½ miles above Union Park.

Eliot Shoal.—Three-quarters of a mile above Whitney Point, is **Eliot Point** on the northeast side of **Patterson Bay**, and 400 yards southeastward from Eliot Point lies the shoal of that name with one foot water over it, a danger to the local steamer calling at places north of Grenadier Island. 45

Bridge Island is a small island about 300 yards from the mainland and about two miles southwestward of Whitney Point.

Chart 57.

Light.—A white square skeleton tower erected on a rock 500 feet southward of Bridge Island exhibits at 18 feet above water a *fixed white* light, visible 7 miles from all points of approach. This is to guide vessels towards the Canadian channel. The light is unwatched.

Buoys.—A red spar buoy is moored on the west edge of the channel about 530 yards eastward of Bridge Island light; abreast this buoy is a black spar buoy on the east side of the channel; northeastward of this black spar buoy are two other black spars marking two rocks with less than 6 feet over them and about 10 midway between the spar buoys is a spot with only one foot over it.

Chippewa Point, on the United States shore, is situated with its southwest extreme 4 miles southwestward from Oak Point. The shore for half a mile below, and one mile above the latter, is fronted by a shallow bank containing several islets, the upper one of which is **Whaleback Island**. Distant 1.8 and 15 1.4 miles, respectively, northeast of Chippewa Point, are situated two small dilapidated wharves known as **Forrester** and **Allen** docks. Two patches with 8 and 4 feet water on them are situated about 450 yards north of the former.

Southwest 300 yards from Allen dock is a boat harbour called **Blind Bay**, the entrance to which can be seen on the darkest night, and serves as a useful 20 turning mark. Between Forrester dock and Chippewa Point, the water is fairly deep. The land close to this shore rises to a height of 80 feet.

Shoal water extends 400 yards southwest from Chippewa Point.

Crossover Island.—This small island, in United States waters, about 10 feet high, with houses and an abandoned light tower on it, lies more than half 25 a mile from the southeast shore, and $1\frac{3}{4}$ miles southwestward of Oak Point.

From Crossover Island, shoal water extends south, and southeast, 150 yards. The small islet, 300 yards southwestward of Crossover Island, is bare and about 5 feet high.

Light.—On Bay State Shoal, half a mile west of Whaleback Island, is 30 erected a red square skeleton tower on a white tank house on a concrete base, that, from a height of 38 feet above the water, exhibits a *group flashing white* light of *two flashes every 5 seconds*.

Buoyage.—To the westward of a shoal with 11 feet over it and 3 cables 55° from Bay State Shoal light is moored a black light-buoy, 5, showing a *flashing* 35 *green* light *every 4 seconds*. On the east end of Bay State Shoal, 700 feet from the lighthouse, is moored a red conical buoy, 2. Northwest of a shoal, with 6 feet over it, lying $1\frac{1}{2}$ cables west of Whaleback Island, is moored a black can buoy, 7. On the southwest extreme of the shoal making off from Whaleback Island is moored a black light-buoy, 9, showing a *flashing white* light *every 4* 40 *seconds*. Red light-buoy, 4, showing a *flashing red* light *every 4 seconds*, is moored opposite light-buoy, 9, and 600 feet 99° from the tower on Crossover Island.

Blind Bay Shoal light-buoy.—On the south side of the shoal marking the turn opposite Blind Bay, is moored a red light-buoy, 4 A, showing a *flashing* 45 *red* light *every 4 seconds*. The south edge of the shoal is also marked by a red conical buoy.

Superior Shoal, 400 yards long northeast and southwest, with one foot water on it, lies 200 yards west from the upper extreme of Chippewa Point, being separated therefrom by a narrow channel.

Chart 57.

Light.—On the north end of Superior Shoal is erected a black pyramidal skeleton tower on a white tank house that at a height of 28 feet exhibits a *flashing white light every 3 seconds*, visible 12 miles. This light is unwatched.

Rockport.—From Whitney Point (*see* page 55) the Canadian shore runs in a general southwest direction, 10 miles, to Rockport, at the northeast entrance to Raft Narrows (Canadian Middle Channel, *see* page 63). The village is snugly sheltered from the southwest, and is consequently not seen from that direction. Its small yellow-coloured church has a white band round its steeple. The nearest railway station is **Lansdowne** on the Canadian National Railways, distant about $2\frac{3}{4}$ miles. There is steamboat connection with Kingston, Ogdensburg and the principal places between.

Wharves.—At Rockport is a Government wharf with a face 60 feet in length; along the face is a depth of $13\frac{1}{2}$ feet. Lansdowne Government wharf has a face 42 feet in length with a depth of 6 feet along the face. 15

Ferry.—A ferry plies between Rockport and Alexandria Bay.

Rockport and the adjacent shores and the islands are much frequented in summertime as pleasure resorts.

On this portion of the Canadian shore are the local steamer landing piers of **Mallorytown** and **Pooles Resort**, distant respectively, $3\frac{3}{4}$ and 6 miles south-west of Whitney Point. A short distance below Pooles Resort is **Larue Mills** at the mouth of Larue Creek. Communication is made with the main highway by road 2 miles back.

A rock just above the water, lies 65° , distant three-quarters of a mile from Mallorytown pier, the local steamboat track passing close southeast of it, when using the channel northwest of Grenadier Island. This rock lies also 800 yards west of Ice Island. 25

Vessels approaching Pooles Resort landing pier must take care to avoid shallow water lying 500 feet southeast of the pier.

Grenadier Island is $4\frac{3}{4}$ miles long northeast and southwest, the upper extremity being $1\frac{1}{2}$ miles below Rockport. Between this end of the island and the Canadian shore lies **Tar Island**. A shallow flat having on it several islets, the northernmost of which are **Ice** and **Broughton Islands**, extends 2 miles northeast of the lower part of Grenadier Island, the whole being separated from the main shore by a narrow channel with 12 feet least water, the most difficult part being abreast the lower end of Tar Island. The local steamboat, drawing about 5 feet water, calling at Mallorytown and Pooles Resort, uses this channel. 35

Lights.—On the southwest extremity of Grenadier Island is erected a steel tank, which, at a height of 25 feet above the water, exhibits a *flashing white light*, visible in clear weather 12 miles. 40

A white square steel skeleton tower, erected on **Duck Island**, exhibits, at a height of 22 feet, a *fixed white light*, visible 5 miles in clear weather. This is for the guidance of boats using the Canadian channel.

Buoys.—The channel between Grenadier Island and the Canadian main shore is marked by the following buoys:— 45

- (1) A black spar on the edge of the bank, 800 yards from Ice Island.
- (2) A black and red horizontally-striped spar buoy marking an 8-foot middleground, opposite Channel Island.
- (3) A black spar on the southeast side of the channel, marking a very shoal spot abreast of (2). 50

Chart 57.

(4) A black light-buoy, 9 C, showing a *flashing white* light on the south-side of channel, opposite Pooles Resort, marking the bend in the channel.

(5) A red spar on the edge of the bank, 170 yards northeastward of Goose 5 Island.

(6) A black spar on the northern edge of a shoal patch 700 yards southwest of Duck Rock light.

(7) A red spar opposite (6) on northwest side of channel.

Indian Chief Islands.—Occupying the middle of the river, between Whitney, and Chippewa Points, is a group of small islands under various names, the two, farthest south and nearest Chippewa Point, being named Indian Chief Islands, the ship channel passing between them and Chippewa Point. From the northern islands of the group, the central and highest of which is about 30 feet high, only one being occupied, shoal water extends to Crossover Island.

15 Between Indian Chief Islands and Grenadier Island, are several other small islands, the most outlying being Dark and **Griswold Islands**.

Between Grenadier and Indian Chief Islands are many unbuoyed rocky patches, but, as the ship channel passes southeastward of them all, only those bordering the channel will be alluded to.

20 **Dark Island**, steep to on its southeast side, about 40 feet high, and crowned with a handsome and imposing summer residence with red tiled roof, lies one mile southwesterly from Chippewa Point.

Dark Island Channel.—An unbuoyed channel with deep water, narrow between isolated shoals, leads from the deep water off Whitney Point on the 25 Canadian shore, southward towards Dark Island and past its western end into the main channel near Haskell Shoal. It is much used by local craft.

Dark Island Shoal, with 1 foot water over it, is situated one-half mile north of the northeast end of Dark Island. East, 430 yards from this shoal, is a patch with 8 feet water on it.

30 A red conical buoy is moored on the south end of the shoal extending south from Dark Island.

Light-buoy.—Haskell Shoal, with 16 feet of water over it, lies one mile above Dark Island; on the north side of the shoal is moored a black buoy showing a *flashing white* light.

35 **Sister Islands**, in United States waters, and consisting of three small islets joined by causeways, and entirely occupied by the lightkeeper's residence, lie nearly 400 yards southward from the northeast portion of Grenadier Island, and are nearly midway between Chippewa Point and Grenadier Island light-house.

40 **Light.**—On the northeasternmost of Sister Islands is erected a grey square tower, which at a height of 47 feet above the water, exhibits a *flashing red* light, every 3 seconds, visible 12 miles.

Shoals, with as little as 2 feet water on them, extend a quarter of a mile southwest from Sister Islands.

45 A rock, awash, lies 300 yards from Grenadier Island and half a mile westward of Sister Islands light.

Buoy.—**Empire Shoal**, with 16 feet of water over it, lying $1\frac{1}{2}$ cables southward of Willoughby Island, is marked by a red conical buoy.

Chart 57.

Light.—A black skeleton tower, with a white tank house, standing in 5 feet of water, 750 feet northwest of Third Brother Islet, exhibits, at a height of 38 feet a *flashing white light every 5 seconds*.

Pilot Island.—Two small islands, **Willoughby** and **Pilot**, having deep 5 water close to their southeast sides, lie 800 yards, and half a mile, respectively, northeastward from Sister Islands lighthouse. Pilot Island is small, but its trees stand out well from the northeast, being seen, when on the track, a little to the right of Sister Islands lighthouse.

Scow Island Outer Shoal.—**Buoy.**—An islet, called Scow Island, lies half 10 a mile north of the southwest end of Oak Island (*see below*); and, half a mile northwest of Scow Island, marking Scow Island Outer Shoal with 2 feet water on it, is moored a black can buoy, $1\frac{1}{2}$ miles northeast of Sister Islands light.

A patch with 8 feet on it, called **Scow Island Inner Shoal**, lies midway between the buoy and Scow Island; and, one with 12 feet water on it, called 15 **Lower Scow Island Shoal**, is situated three-quarters of a mile northeast of the buoy.

Round Island, the central one of a group of islets lying near the southeast side of Grenadier Island, and about 10 feet high, is situated $1\frac{3}{4}$ miles northeastward of Grenadier Island light, and over $1\frac{1}{2}$ miles southwest from Sister Islands 20 light.

Shoals.—Southeastward, 300 yards from Round Island, are **Round Island Shoal** with 10 feet, **Slim Island Shoal** with 8 feet water, and the less important **Poverty Island Upper Shoals**, lying near the divergence of the Canadian and 25 American channels.

Oak Island.—From Chippewa Point, the New York shore trends southeasterly 2 miles, to Chippewa Bay Village, to which 5 to 6 feet water can be carried across the extensive flats fronting it. Oak Island, thickly wooded, and $1\frac{3}{4}$ miles long, is situated in the upper portion of Chippewa Bay; and midway between the island and Chippewa Point, are several smaller islands, the outer 30 cluster being known as **Cedar Islands**, and lying $1\frac{3}{4}$ miles westward of Chippewa Bay Village. There is a boat landing on the southeast side of the largest Cedar Island.

Goose Bay.—From the southwest end of Oak Island, the shore runs in a southwesterly direction $3\frac{3}{4}$ miles to the entrance to Goose Bay, suitable only for 35 small craft. Fronting this section of the shore are **Halfway, Hemlock, Third Brother, Lone Brother, and Ironsides Islands**. Lone Brother, small and north of the ship channel, has shoal water extending 330 yards from its southwest side. Ironsides Island is densely wooded, and high, its northwest side being cliffy. A rock, with less than six feet of water on it, lies about 100 yards west 40 of its northwest point.

Ironsides Shoal.—**Light-buoy.**—This rocky patch with 4 feet of water on it lies a quarter of a mile west of Ironsides Island. A red buoy showing a *flashing red light, every 4 seconds*, is moored in 17 feet of water on the south side of this shoal. 45

Alexandria Bay.—From Goose Bay, the New York shore continues in the same direction $3\frac{1}{2}$ miles to the summer resort, Alexandria Bay. For $1\frac{3}{4}$ miles southwest of Goose Bay, the shore is fronted by several islands known as **Excelsior Group**, between which, and **Summerland Group**, a third of a mile northwest of it, is the channel to Alexandria Bay and Upper Narrows. (*see* 50 page 66). **Resort Island**, about 15 feet high, at the upper end of Excelsior

Chart 57.

Group, and nearest to the ships' track, has a handsome villa with pagoda-like roof, erected on it, and is a conspicuous feature on the course between Sister Islands light and Alexandria Bay. The highest islands of Summerland Group 5 are 40 to 60 feet high. The wharves at Alexandria Bay are available for boats of 11-foot draught and are easily approached from the channel. There is a small bay on the northeast side of the village affording anchorage for boats drawing from 6 to 11 feet of water.

Alexandria Bay has steamboat communication with Toronto, Kingston and 10 Montreal, and the principal places on the river between them by vessels of the Canada Steamship Lines, and other companies. A ferry runs also to Westminster Park, Thousand Islands Park and Rockport. Alexandria Bay possesses several very fine hotels, the southwestern one, the Thousand Islands hotel, having a very conspicuous principal tower, somewhat rounded at the top, and 15 affording a useful steering mark from the northeast. The central, principal tower of the Crossman hotel is square.

Chart 58.

Lights.—Sunken Rock.—On a reef half a mile northeast of Alexandria Bay Village, is erected a white conical tower, from which, at a height of 30 feet 20 above the water, is exhibited a *fixed green* light, visible 12 miles. The small pier, upon which the tower is erected, has a small boathouse on it. Vessels pass northwest of this light if not stopping at Alexandria Bay.

Sunken Rock Shoal.—On the west edge of the reef is erected a black, square skeleton tower on a white tank house that, at an elevation of 28 feet, 25 exhibits a *flashing white* light every 3 seconds. The light is unwatched.

Deer Island.—About $1\frac{1}{2}$ cables westward of the north point of Deer Island is exhibited, at an elevation of 11 feet from a 5-pile dolphin in 8 feet of water, a *flashing white* light every 4 seconds. The light is unwatched.

On the small island northeast of Harbour Island and 1,650 feet north- 30 westward of Sunken Rock light, a *flashing red* light every 2 seconds, is shown from a red iron spindle at a height of 3 feet above the water. This light is privately maintained.

Buoys.—Southwesterly of Sunken Rock Shoal lighthouse are two dangers named **Frontenac Shoal**, and **Broadway Shoal**. The first is marked by a red 35 spar buoy, and, Broadway Shoal, by a red and black horizontally-striped can buoy. They bear, respectively, from Sunken Rock Shoal lighthouse, 243° distant 2 cables, and 200° distant $1\frac{1}{2}$ cables.

Wells Island, in United States waters, extends 8 miles southwest from Rockport, being separated from the southeast shore by the principal ship channel, 40 known as Upper Narrows (see page 66). The southeastern portion of Wells Island rises to a height of 144 feet. **Lake of the Isles** on the northeast, and **Eel Bay** on the southwest, both shallow, almost divide the island. On the northwest and northeast extremities are situated **Grand View Park** and **Westminster Park**, summer resorts. From the latter, islands, most of which have summer 45 cottages on them, extend northeastward $1\frac{3}{4}$ miles, those nearer Wells Island being named **Manhattan Group**, and those, the most distant therefrom, being known as Summerland Group, already alluded to. Westminster Park has a depth of $8\frac{1}{2}$ feet at the deeper of its two wharves.

Chart 57.

Whiskey Island, isolated, small, bushy, and about 10 feet high, is the northeastern islet of the Summerland Group, and lies between the American and Canadian channels.

Whiskey Island Shoal.—**Light-buoy.**—Whiskey Island Shoal consists of 5 two spots with 14 and 17 feet of water over them with deeper water between. The southerly spot of 14 feet is marked by a red buoy showing a *flashing red* light moored on the north edge of the shoal, $3\frac{1}{3}$ cables, south of the south end of Whiskey Island.

Light.—On the north side of the Excelsior Group a black skeleton tower 10 exhibits, at an elevation of 34 feet above the water, a *flashing white* light every 5 seconds. The light is unwatched.

Grenadier Shoal, with 16 feet of water over it, lies about in the middle of the passage between Grenadier Island and Summerland Group 2 cables westward of Whiskey Island. The Canadian channel passes northwest of this shoal. 15

From the northeastern islands of the Summerland Group, a bank, with 3 feet water on it, extends northward 400 yards.

Hill Island, $3\frac{1}{2}$ miles long, in the Province of Ontario, is situated close northwest of the northeastern portion of Wells Island, and attains a height of 140 feet. 20

Club Island, 60 feet high, and over three-quarters of a mile long northeast and southwest, lies in the lower entrance to Raft Narrows, and 315 yards south of the Rockport shore, the Canadian channel, here being 40 fathoms deep.

Charts 57, 58, P2043.

Directions, Prescott to Alexandria Bay and Rockport.—(For direc- 25
tions Prescott to Cornwall, *see* page 49). A vessel from either Prescott or
Ogdensburg will keep the middle of the river for $7\frac{1}{2}$ miles to half a mile above
Maitland, the mid-channel course being 223° , when to avoid Catamaran Shoal
of 12 feet, marked by a black can buoy, keep nearer the Canadian shore until
close to McNair Island steering 233° . Thence pass in mid-channel between 30
McNair light and North McNair Shoal red light-buoy, and if not calling at
Brockville, steer 223° for 2.1 miles until abreast Skelton Island light and Conran
Island Shoal buoy on the port side. Now steer 232° in mid-channel until abreast
Royal Island light, when steer 222° for $3\frac{1}{2}$ miles passing McCoy Island Shoal and
DeWattville Island Shoal light-buoys to port and Coronation Shoal red 35
light-buoy and Needles Eye light to starboard. When $1\frac{1}{2}$ miles above DeWatt-
ville front light these leading lights will be seen in one astern, and alter course to
 218° for $1\frac{1}{4}$ miles passing the abandoned lighthouse on Cole Shoal and Cole
Shoal red light-buoy to starboard and passing on the port side the black spar
buoy on Cole Ferry Shoal, and a black light-buoy a third of a mile above Cole 40
Shoal red light-buoy. When 7 cables above this black light-buoy steer 193° for
2.5 miles passing to starboard the light on Bay State Shoal, a red conical buoy
and a red light-buoy, and passing to port two black light-buoys and a black can
buoy. When abreast of Allen Dock steer 317° for 3.5 miles passing a red light-
buoy and two red conical buoys to starboard and Superior Shoal light to port. 45
When abreast Haskell Shoal light-buoy to port, steer 209° for 1.9 miles to abreast
Sister Island light and with Third Brother Island Shoal light to port, steer 206°
for 1.4 miles. When Ironsides Shoal light-buoy is abeam, steer 227° for 2.5
miles until abreast the upper end of Summerland Island passing Whiskey Island
Shoal light-buoy to starboard and Excelsior Group light to port. Now steer 50

Charts 57, 58, P2043.

217° for 2 miles passing Sunken Rock light and Sunken Rock Shoal light to port, when proceed to the wharves at Alexandria Bay, or continue through Upper Narrows to Lake Ontario or Kingston as directed on page 81.

- 5 If proceeding by the Canadian channel a vessel may follow the same course until abreast Ironsides Shoal red light-buoy, when steer 248° until abreast and 200 yards off Grenadier Island light. Now haul a little more westward, steering 252°, for the entrance to Raft Narrows between Club Island and Rockport or proceed to the pier at the latter. (For directions Rockport to Gananoque and Kingston *see* page 82 and for Rockport to Prescott *see* below).

Alexandria Bay to Prescott.—If from Lake Ontario (*see* page 93) pass northwest of Broadway Shoal red and black-striped buoy and southeast of Frontenac Shoal red spar buoy 14, (page 60) northwest of Sunken Rock Shoal light and Sunken Rock light and steer 37° for 2 miles until abreast the upper end of 15 Summerland Island. Now steer 47° for 2.5 miles passing Excelsior Group light to starboard and Whiskey Shoal light-buoy to port and when abreast Ironsides Shoal light-buoy steer 26° for 1.4 miles to abreast Sister Island light and thence 29° for 1.9 miles to Haskell Shoal light-buoy.

If from Rockport, pass 200 yards south of Grenadier Island light and 20 thence steer 68° to pass a cable south of Ironsides Shoal light-buoy.

When abreast Haskell Shoal light-buoy steer 37° for 3.5 miles until 2 cables below the light-buoy off Blind Bay. Now steer 13° for 2.5 miles passing the light on Bay State Shoal to port and two light-buoys and a can buoy to starboard. When DeWattville leading lights come in line steer on them heading 38° 25 for 1¼ miles, passing on this course Cole Shoal red light-buoy to port, and passing to starboard a black light-buoy a third of a mile above Cole Shoal red light-buoy and Cole Ferry Shoal black spar buoy. From a point 1½ miles above DeWattville front light steer 42° until abreast Royal Island light, and pass in mid-channel through Brockville Narrows, passing Needles Eye light and Coronation Shoal light-buoy to port and DeWattville Island and McCoy Island Shoal 30 light-buoys to starboard. From abreast Royal Island light steer 52° until abreast Skelton Island light passing Conran Island shoal light-buoy to starboard. Steer 43° to pass midway between McNair Island light and North McNair Shoal light-buoy and when abreast the light head 53° for 3.1 miles passing 35 to port of Catamaran Shoal which is marked by a black can buoy. Now keep in mid-channel steering 43° until arriving at Prescott or Ogdensburg. (If continuing on downstream *see* page 49; if entering Ogdensburg Harbour, *see* page 48.)

CHAPTER IV

ROCKPORT AND ALEXANDRIA BAY TO KINGSTON AND LAKE ONTARIO

Chart 58.

Canadian Middle Channel.—A new channel extending from the head of Grenadier Island, through the Raft Narrows, and Fiddlers Elbow, and on to the open water between Wolfe and Howe Islands was established in 1915. It has a least width of 300 feet, and least depth of 20 feet, swept to 18 feet and dredged where necessary. Numerous buoys and beacons outline this channel. (For directions see page 82, Rockport to Kingston by Middle Channel.) 5 10

Raft Narrows.—**Garrett Island.**—From Rockport (see page 57), the Canadian shore of the St. Lawrence River runs in a general westerly direction, $4\frac{1}{2}$ miles, to Garrett Island, the low neck at the back giving the point that insular appearance. Between Hill and Garrett Islands lies a group, $2\frac{1}{2}$ miles long, the cluster nearest Garrett Island being known as **Sherbrooke Islands**. The two largest between Garrett Island, and the west part of Hill Island, are named Lynedoch and **Wallace Islands**, the passage between them being known as Fiddlers Elbow. The channel, east of the latter, is named the Raft Narrows. 15

The north shore of the Raft Narrows is bold, rising quickly to a height of 80 to 140 feet, and the water is deep close to the shore. **Surveyor Island** in the mouth of **Bucks Bay** on the north shore, seven-eighths of a mile east of Fiddlers Elbow, with its red roofed cottage and flagstaff, is a good guide for the channel, and may be passed close south of. On the south side, between **Club Island** and Fiddlers Elbow, there are a few cottages. 20

Ivy Lea is a summer resort on the main shore of the bay just below Garrett Island. The bay contains the Sherbrooke Group of islands lying between the mainland and Lynedoch Island. Communication is had by road with Landsdowne station and highway, four miles back. 25

Bridge.—The Thousand Islands International bridge crosses the river from Ivy Lea to Collins Landing, N.Y. The bridge over the Canadian channel to Georgina Island is a suspension bridge with a main span 750 feet long and clearance of 120 feet. A steel arch 348 feet long crosses Lost Channel to **Constance Island** and a continuous truss of two 300-foot spans from Constance Island to Hill Island. The International Rift bridge between Hill and Wellesley Islands is a 90-foot rigid frame arch span of reinforced concrete. The bridge across the Upper Narrows from Wellesley Island to Collins Landing is a suspension bridge with an 800-foot main span and clearance of 135 feet above the water. 30 35

Shoal.—An uncharted rock shoal, with about 3 feet of water over it, makes out south to mid-channel from the small island lying just west of Constance Island. There is good water for small boats on the Rabbit Island side. 40

Fiddlers Elbow.—At **Wood Island** two channels are provided; the Fiddlers Elbow for upward bound vessels, and the dredged cut south of Wood Island for downward bound vessels. From the junction of these channels, mid-channel is kept, until past Lynedoch Island light. There is a house on the northeast end of Wood Island and the southwest end is cliffy. There are several summer cottages northwest of Wood Island. 45

Chart 58.

Beacon.—A pyramidal white beacon surmounted by a white drum is erected at the northeast end of Wood Island.

Light-buoy.—In 18 feet of water south of Wood Island is moored a red 5 steel buoy showing a *flashing red* light.

The current in the channel southeast of Wood Island has a mean rate of about $2\frac{1}{4}$ knots.

Lynedoch Island.—**Light.**—This island is situated at the southwest end of Fiddlers Elbow. On the northwest point of the small island opposite the 10 upper end of Lynedoch Island is erected a white, square wooden structure, that at a height of 40 feet above the water, exhibits a *fixed green* light, visible 6 miles.

Buoy.—A black spar is moored on the west extreme of the shoal off the small island south of Lynedoch Island.

A pinnacle rock, awash, with a top area of about 15 feet square, lies 440 15 yards southwest of the southwestern tip of Lynedoch Island and nearly on line from that point to Sir William Island.

Horseblock Point.—From Garrett Island, the shore continues in the same direction $2\frac{1}{2}$ miles to Horseblock (formerly called **Anderson**) Point, close north-west of which is **Landon Bay**.

20 **Navy Islands** form a group lying $1\frac{3}{4}$ miles southeast, and $1\frac{1}{4}$ miles southwest of Horseblock Point, the largest and southwestern one being known as **Stave Island**, separated from **Prince Regent Island** by Gananoque Narrows. A number of the islands in the Navy Group have been named after commanders of British gunboats, and survey vessels on the St. Lawrence River and Great 25 Lakes in the years 1812 to 1817.

Light.—A *flashing red* light is shown from a 4-foot standard on the west side of a rock in the narrow channel between Stave and Downie Islands, $1\frac{1}{2}$ cables west of the west end of the latter island. This light is privately maintained and is unwatched.

30 **Steeple or Chapleau Shoal.**—**Buoys.**—**Sir William Island**, bushy and 10 feet high, which may be considered as the eastern of Navy Islands, has several rocky patches with 3 to 9 feet water over them lying 300 yards southeast and southwest of it, in addition to which is Steeple Shoal with a depth of 2 feet over it, the red spar buoy on which is one-half mile southwest of Sir William Island. 35 The partly wooded island 200 yards southeast of Steeple Shoal, is about 15 feet high.

A black spar is moored on the 7-foot patch, about a cable southeast of Steeple Shoal.

Fair Point, on the Canadian side, is $2\frac{1}{2}$ miles westward from Horseblock 40 Point, the deep indentation between them taking the names of Landon and **Holsted Bays**, the village in the latter having a landing wharf.

The Lake Fleet is the name given to a group of small islands, $3\frac{3}{4}$ miles long northeast and southwest, lying in Canadian waters between Stave Island and the northwest portion of Grindstone Island. Individual islands of the group 45 bear the names of British gunboats and surveying vessels operating on the St. Lawrence River in the years 1812 to 1817. The largest of that portion of The Lake Fleet group, lying 380 yards north of Grindstone Island, is named **Camelot Island**. That almost joining the northeast side of the latter is named **Niagara Island**. The track, known by some as Middle Channel, passes close

Chart 58.

along the northwest sides of both these. Three quarters of a mile westward of Camelot Island is a small broken islet called **The Punts Islands**. The two shoals which formerly lay north of these islands have been removed.

Buoys and beacons.—The following buoys and beacons mark the above 5 channel:—

(1) A red spar buoy moored on the west edge of a 9-foot spot lying about $1\frac{1}{2}$ miles eastward of Gananoque Narrows light.

(2) A black spar, moored on the northern edge of a rocky patch with 5 feet of water over it, lying about three-quarters of a mile east of Gananoque 10 Narrows light.

(3) A red spar, moored on the northwestern edge of a patch with 9 feet of water over it, lying about three cables westward of (2); the channel is between (2) and (3).

(4) A black spar, moored on an 11-foot spot, about 330 yards northwest 15 of **Fort Wallace Island**.

(5) A red spar, moored south of **Bloodletter Island**.

(6) A pyramidal whitewashed beacon surmounted by a white drum is erected on the northwest extreme of Camelot Island.

(7) A red spar is moored at the southern edge of the shoal water extending 20 from **Dumfounder Island**.

(8) A red spar is moored on the south extreme of a 4-foot shoal lying 170 yards south of Bass Island.

(9) A black spar is moored on the northwest edge of a 7-foot shoal half 25 a mile off the northwest coast of Grindstone Island.

Gananoque Narrows, as before stated, is the passage, only 100 feet wide, between Prince Regent and Stave Islands, the former being the north-eastern island of The Lake Fleet Group, and the latter, the southwestern of Navy Islands.

Light.—On the northeast extreme of Prince Regent Island is erected a 30 white square tower, which, at a height of 44 feet, exhibits a *fixed white* light, visible 3 miles. The light is unwatched.

Buoys.—A red spar buoy is moored about 260 feet northeast of the light-house, vessels passing between the latter and the buoy.

On the shoal, making off 170 yards northeast of **Princess Charlotte Island**, 35 is placed a black spar buoy, which vessels pass northward of.

North of Gananoque Narrows, a small cluster of boulders 3 feet above the water lies at the southwest end of a shallow reef from Stave Island, 260 yards 290° from the lighthouse. A similar cluster lies 160 yards 325° from the same. A rock, 2 feet above water, lies 273° distant 650 yards from the same. These 40 three lumps must be carefully avoided at night, by keeping the northwest coast of Prince Regent Island aboard.

Gananoque, built upon both sides of the river of that name is 18 (16 naut.) miles by water, and 25 miles by the Canadian National Railways from Kingston. It is, also, nearly $2\frac{1}{2}$ miles westward from Fair Point, the shore 45 between them 40 feet high, being fronted by a bank a quarter of a mile wide under the depth of 18 feet.

Chart 58.

Steamboats afford communication with the principal ports between Toronto and Montreal in summer. Other lines of steamers call at the chief places on the river between Kingston and Prescott. A ferry steamboat also runs to Clayton, New York. The town bridge crosses the river a third of a mile from the mouth and another bridge is located near the mouth. Gananoque had in 1941 a population of 4,010.

Wharves.—The depth at the wharves lying east of Gananoque River and in the channels leading to them is 11 feet. The entrance of the Gananoque River and along the face of the wharves in the river and up the channel for a distance of 800 feet above the first bridge was dredged in 1936 to a depth of 9 feet. The east side of the entrance of this channel is marked by three red spar buoys. A wharf at the foot of Clarence Street, on the west side of the mouth of the river was constructed in 1935. There is a depth of $6\frac{1}{2}$ feet on both sides of the wharf and a basin extending southward from the wharf 400 feet long and 250 feet wide was dredged in 1935 to a depth of from $6\frac{1}{2}$ to 8 feet. A channel, with the same depth, connects this basin with the deep water of the St. Lawrence River. The south side of the basin and channel is marked by three black spar buoys.

Intake Pipe.—An intake pipe lands on the point just west of the mouth of the Gananoque River.

Ferry channel.—Buoys.—For the accommodation of the ferry from Gananoque to Clayton, New York, a channel 500 feet long, 200 feet wide between **Tidds** and **Forsyth Islands** has been dredged to 12 feet. The channel is marked by one red and two black spar buoys.

Jackstraw Island.—Lying three-quarters, and, one-third of a mile respectively southeast of Fair Point, are **Gordon**, and **Jackstraw Islands**, the former about 400 yards northward of the ship's track.

Between these and the shore lies **Sisters, Dobbs, Perch** and **Hog Islands**, 30 east of the latter being **Holsted** and **Landon Bays** inside of **Horseblock (Anderson) Point**.

Jackstraw Shoal.—Light.—From Jackstraw Island, shoals, one of which is uncovered, extend over half a mile in a southwesterly direction, and, on the farthest of these patches is erected a white square tower, which, from a height of 34 feet, exhibits a *fixed red* light, visible 5 miles. The light is unwatched.

Day beacon.—Corn Island, partially wooded, and about 10 feet high, is situated half a mile southwest of Jackstraw Shoal lighthouse, and three-quarters of a mile northeast of Admiralty Islands (*see* page 70) being connected thereto by a shallow bank which continues northeast of Corn Island as far as The Lake Fleet group (*see* page 64). On the northeast edge of this bank is erected a mast surmounted by a drum, both painted black, marking the south edge, of the channel 240 yards southeast of Jackstraw Shoal light.

Upper Narrows.—Thousand Island Park is situated on the southwest extremity of Wells Island, 40 feet high, and called formerly, **Talavera Head**, and had, in 1907, a summer population of about 4,000. The channel southeast of Wells Island, from Thousand Island Park to Alexandria Bay, and the principal thoroughfare, is known as Upper Narrows. At Thousand Island Park landing pier, there is a depth of about 9 feet, the pier being marked by an are lamp. The approach from the river channel is narrow and full of rocks.

The principal places on the New York side of Upper Narrows, southwest of Alexandria Bay, are **Point Vivian, St. Lawrence Park, Collins Landing**,

Chart 58.

and **Fisher Landing**, the latter situated at the southwest entrance. **Swan Bay**, a shallow inlet between St. Lawrence Park and Collins Landing, is situated near the middle of the Narrows, and opposite a smaller indentation in Wells Island, named **Brown Bay**. 5

Light.—A red skeleton tower, with a white tankhouse, erected near the middle of the southeast coast of Wells Island, opposite St. Lawrence Park, exhibits at 34 feet above water, a *fixed red* light, visible 12 miles. This light is unwatched.

Bridge.—See page 63. 10

Light.—**Pullman Shoal**.—On Pullman Shoal, a third of a mile westward of Alexandria Bay, is erected a red skeleton tower, with a white tankhouse, in 5 feet of water, which, at an elevation of 34 feet, exhibits a *flashing red* light every 5 seconds; the light is unwatched.

Comfort Island Shoal.—For a mile above Alexandria Bay there extends a 15 chain of islands, all on the south side of the channel. The uppermost one is **Comfort Island**, and southwest for 200 yards from it extends a shoal with 2 feet of water over it.

Light.—On the west end of Comfort Island Shoal is erected a black skeleton tower with a white tankhouse, which, from a height of 28 feet, exhibits a *flashing* 20 white light every 3 seconds, visible 9 miles.

Niagara Shoal.—**Buoy**.—Between Fisher Landing, and Fineview on Wells Island, at the southwest entrance of Upper Narrows, there is a cluster of islets, the western of which is known as Rock Island (*see* below). The northeastern islet of the group lies half a mile from Fisher Landing, and 200 yards northwest 25 of a projecting point from the main shore. Northwest 300 yards from this point is Niagara Shoal with 2 feet of water on it, marked by a black spar buoy, bearing 50°, distant 6 cables from Rock Island light. In the bight of the main shore for a mile northeast of this shoal, shallow water extends off a quarter of a mile, the Wells Island side of the Narrows being the deeper. 30

Fineview Pier, with a depth of 7 feet along the face, is situated on the south extreme of Wells Island, a quarter of a mile southeast of Thousand Island Park.

Granite State Shoal is the name given to the southern edge of the shallow rocky bank extending a quarter of a mile southwest from Fineview.

Light.—On the east point of Granite State Shoal is erected a red skeleton 35 tower, with a white tankhouse, which at a height of 28 feet above water exhibits a *group flashing white* light, of two flashes every 3 seconds visible 10 miles. This light is unwatched.

Light.—**Fisher Landing**.—A white spindle on a rock 800 yards southeast of Granite State Shoal light, at an elevation of 11 feet, exhibits a *flashing green* 40 light, every 3 seconds.

Buoy.—A red conical buoy is moored in 16 feet of water on the upper end of Granite State Shoal.

Rock Island.—**Light**.—On the western islet of the group, in the southwest entrance to Upper Narrows, is erected, on the outer end of a small pier, a white 45 conical tower, which, at a height of 50 feet above the water, exhibits a *fixed green* light, visible 10 miles. The ship channel is northwest of this lighthouse, and southeast of Granite State Shoal lighthouse.

Chart 58.

Light-buoy.—A black light-buoy, showing a *flashing white light every 4 seconds*, is moored on the north side of a 20-foot spot lying nearly three-eighths of a mile north of Masons Point.

- 5 **Clayton.**—From Fisher Landing the shore trends in a general south-westerly direction $4\frac{1}{2}$ miles to Clayton. The depths at its wharf range from 6 to 18 feet. Steamboats of the Canada Steamship Lines call at Clayton daily during summer, affording communication with Toronto, Kingston, Brockville, Montreal and other places between. A ferry also runs to Thousand Island
10 Park and Gananoque. Clayton is a station of the New York Central Railway.

A quarter of a mile east of Clayton is **Washington Island** separated from the mainland by shallow, rocky flats.

Three-quarters of a mile, and 2 miles southwest of Fisher Landing, are **Blind** and **Spicer Bays**.

- 15 **Round Island**, on which is situated the summer resort, **Round Island Park**, is a mile northeast of Clayton and between it and Spicer Bay, being separated from the shore by a channel 300 yards wide. A breakwater for the protection of power boats runs out 200 yards in a northeast direction. The steamboat pier is on the middle of the northwest side of Round Island, between
20 which and **Little Round Island** there is a depth of 13 feet.

North Colborne Island.—Northwest of the middle of Round Island lie two small islands, the outer one being named North Colborne, the north side of which has deep water close to it.

- Chapman Shoal.**—A quarter of a mile west from the northwest point of
25 North Colborne Island is a rock just above water called Chapman Shoal.

Light.—On Chapman Shoal is erected a red skeleton tower, with a white tankhouse, which from a height of 28 feet exhibits a *group flashing white light* showing *two flashes every 3 seconds*, visible 12 miles. This light is unwatched.

- Gull Island**, quite small, with rocks extending 200 yards from its eastern
30 side, lies a third of a mile northward of North Colborne Island, and a quarter of a mile 70° from it lies a shoal with 2 feet water over it. **Beckwith Island**, considerably larger than Gull Island, lies 600 yards westward of the latter. A 5-foot patch lies 250 yards off its east shore.

- Calumet Island** is the largest of three, lying half a mile north of Clayton,
35 the ship channel passing between. It is crowned by a very prominent summer mansion, north of which is erected an equally conspicuous tower with a pagoda-like roof, and gallery.

- Shoals.**—A shoal bank with from 7 to 14 feet of water on it extends half a mile towards Chapman Shoal light from the east side of Calumet Island. Near
40 the end of this bank a detached spot with 7 feet of water on it lies 237° distant $3\frac{1}{2}$ cables from Chapman Shoal light. A bank with rocks awash lies $2\frac{1}{2}$ cables west of **Little Calumet Island**.

A shoal patch, with 3 feet of water over it, lies 470 yards 260° from the southwest point of Beckwith Island.

- 45 **Clearing mark.**—Rock Island light in line with the northwest extreme of North Colborne Island, bearing 58° , leads close southeast of the shoals from Calumet Island.

Chart 58.

Eagle Wing Group.—The channel between Calumet Island and Grindstone Island is practically closed to everything but power boats by a group of small islets and shallow spots called Eagle Wing Group.

Prospect Park is situated upon a bluff and conspicuous point three-quarters of a mile westward of Clayton, **French Creek**, crossed by a bridge, running out between them. Prospect Park Point is crowned by a conspicuous house with a tower a little south of it. The site of the house is about 100 feet above the water. The southwest side of the point is composed of a yellow cliff.

Light.—On **Bartlett Point**, the north extreme of Prospect Park Point, 10 is erected a black pyramidal skeleton tower which from an elevation of 35 feet exhibits a *fixed green* light visible 11 miles. This light is unwatched.

Light.—**Light-buoys, Buoy.**—A red buoy, showing a *flashing red* light every 4 seconds, is moored on a 10-foot spot 3,000 feet northeast of Bartlett Point light. 15

At the outer end of the concrete pier belonging to the Standard Oil Co. of New York, on the north side of Washington Island, a *fixed green* light is shown. A black light-buoy, showing a *white flash every 2 seconds*, is maintained by Consaul-Hall Co., on a shoal about 1,250 feet 252° from Washington Island light. A black can buoy, 27, with white reflector, marks a 17-foot spot on the south side of the ship channel about 2,300 feet 60° from Bartlett Point light. 20

Linda Island, 5½ miles westward of Prospect Park is a small island separated from the shore by a boat passage 150 yards wide. Between Prospect Park and Linda Island the shore is fairly regular with good water close in.

A shoal, with 10 feet water on it, lies 257° three-quarters of a mile from the southwest end of Linda Island. 25

The water is deep close to this part of the shore, which rises to a height of 105 feet. The Village of **Riverview** is at a small creek called **Mellen Bay** 2¼ miles westward of Linda Island.

Light.—A white square skeleton tower erected on the northeast end of Linda Island, exhibits, at 33 feet above water, a *flashing white* light, every 3 seconds, visible 12 miles. 30

The light shows a *red flash* when bearing between 66° to 76°, covering the rocky patch, with 10 feet of water over it, described above. This light is unwatched. 35

Grindstone Island, in United States waters, is a ragged island 5¾ miles long northeast and southwest, by 2½ miles in width near its western end, where it rises to a height of 120 feet. On the flat extending 2½ miles southwest from Thousand Island Park on Wells Island is a group of islands separated from Grindstone Island by a deep, unbuoyed channel, with several middlegrounds, leading from the American to the Canadian channel. Large quantities of granite have been taken from a quarry situated on the high eastern side of the island and showing conspicuously from the Canadian channel. 40

The Village of Grindstone is situated about the shores of a little bay on the northwest side of the island and across the Canadian Middle Channel from Thwartway Island. 45

Francis Island, three-quarters of a mile long northwest and southeast, is the largest of a group lying between Grindstone and Wolfe Islands. The island is partly wooded, about 50 feet high, and from the southwest presents a clay cliff. **Black Ant Island**, small, with a smaller island lying close west of it is about 50

Chart 58.

half a mile to the northward of Francis Island. **Arabella Island** lies close south of the latter. These islands are situated in Canadian territory. Northeastward of this group is a passage used by the ferry steamboat between Gananoque and 5 Clayton. **Francis Island** stands upon a shallow bank, known as **Blanket Shoals**, which stretches one mile southeastward from that island, terminating in a rock 300 feet long and 2 feet above water, known as **Rock West**. Half a mile eastward of the latter is a bare islet 5 feet high called **Blanket Island**, steep to on its south side. Blanket Shoals, at one time, extended to Wolfe Island, but 10 the bank has now dredged through it a channel 300 feet wide, 16 feet deep, and half a mile long, close to the northeast extreme of Wolfe Island and named **Wolfe Island Cut**.

Buoyage.—The south and north entrances of this cut are marked by red buoys showing *flashing red* lights and moored 3,300 feet southeast and 700 feet 15 northeast of Wolfe Island light (*see* page 72). The cut is also marked by one red and three black spar buoys between the light-buoys.

Admiralty Islands.—In the triangular space between Gananoque, the northwest point of Grindstone Island, and the east extremity of Howe Island, is a group named Admiralty Islands, under various names, these having been so 20 named after various members of the British Admiralty who held office around the years 1812-1814. The southern large island, named **Thwartway Island**, is separated from Grindstone Island by a passage 400 yards wide known by some as Middle or Canadian Channel (*see* page 63).

Some of these islands, such as Burnt and Beaurivage, are Government park 25 reserves. On Beaurivage, just east of Red Horse Rock light, is the site of a summer camping ground.

Shoals.—**Buoys.**—**Beacon.**—**Bass Island** is the name given to an islet lying 300 yards southwest from the south extremity of Thwartway Island. Southward, 150 yards from Bass Islands, is a patch with 4 feet of water on it, 30 marked by a red spar buoy, which a vessel using Middle Channel must be careful to pass southeast of. **Bass Rock Island**, small, lies on the northwest side of the vessels' track, and 300 yards eastward of Bass Island. A bank, with 2 feet of water upon it, lies half a mile northwestward of the same island. A black spar is moored, on a 7-foot spot, 3 cables southwest of the above red buoy. 35 (For buoys, *see* page 65).

Buoys.—**Juniper Island** is almost connected to the northwest extremity of Thwartway Island, and, between the shoals lying westward of it, a black buoy, showing a *flashing white* light, and a red buoy are placed for the use of the ferry steamer plying between Gananoque and Clayton, the track passing 300 40 yards westward of Juniper Island.

Melville Island.—**Buoys.**—The large eastern island of the group is called Melville Island, and, westward of it, between it and Forsyth Island, are placed, for the use of the same steamboat, two black spar buoys.

Spar buoys also mark the continuation of this channel between Forsyth 45 and Tidds Islands leading towards Gananoque.

Light.—**Burnt Island.**—The two southwestern islands of the Admiralty Group are known as Mermaid and Burnt Islands, between which there is a passage. On Burnt Island, the nearest to Howe Island and connected therewith by a shallow bank, is erected, on its eastern side, a white rectangular structure 50 with a square lantern on the middle of the roof, which, at 64 feet above water, exhibits a *fixed white* light, visible 6 miles. The east side of Burnt Island falls

Chart 58.

suddenly to deep water, and, at the lighthouse, a vessel might tie up to the rocky coast. Near the light there is a small wharf for landing at the park on Burnt Island.

Tin Cap Shoal.—Buoy.—A red and black horizontally-striped spherical 5 buoy is moored on a rock called Tin Cap Shoal, about 200 yards east from Burnt Island light. The track for heavy vessels is between the above buoy and the lighthouse; but light draught vessels using the narrow passage through Admiralty Islands pass southeast of it.

Light.—Red Horse Rock.—The nearest Admiralty Island to Sheriff 10 Point, described below, is named **Beaurivage Island**, and, on its southwest extremity, is erected upon a short pier a white square building, which, at a height of 28 feet above the water exhibits a *fixed white* light called Red Horse Rock light, visible 6 miles.

Anchor Shoal.—Buoys.—In the middle of the passage, between Red Horse 15 Rock light and the northeast extreme of Howe Island, is placed a red and black horizontally-striped buoy, marking Anchor Shoal. A black spar buoy is also moored 380 yards 24° from Red Horse Rock light.

Sheriff Point.—From the entrance to Gananoque River, the Canadian shore, 100 feet high, trends in a general southwesterly direction, 2 miles, to a 20 narrow projection named Sheriff Point, close to which is the little **Point Island** with a summer cottage upon it, distant 250 yards from Red Horse Rock light, the channel to Gananoque passing between them.

Buoys.—Two red spherical buoys are placed on the northwest side of the channel near Point Island, the track passing between them and Red Horse Rock 25 light.

Little Island.—Buoy.—Southwestward half a mile from Gananoque River is Little Island 200 yards southeast of which is moored a black spar buoy on the north side of a 5-foot rock.

Pike and Cherry Islands lie a quarter of a mile westward of Little Island, 30 with *foul ground* between.

Shoal.—One cable south of Pike Island is a spot with 7 feet of water on it.

Spectacles Rocks, two in number, bushy and 5 feet high, lie three-quarters of a mile northeast of Point Island off Sheriff Point.

Buoy.—A shoal extends 250 yards north of Spectacles Rocks and is marked 35 by a black spherical buoy, bearing 35°, distant 320 yards from Spectacles Shoal light. Vessels pass northwest of both this buoy and that off Little Island.

Light.—Spectacles Shoal.—Erected on this shoal is a red skeleton tower which, from a height of 28 feet, exhibits a *fixed white* light, visible 3 miles. The channel is between this light and Spectacles Rocks. 40

Howe Island, attaining a height of 90 feet, $8\frac{1}{2}$ miles long, northeast and southwest, is separated from the Canadian shore by a passage known as Bateau or North Channel, narrowing at mid-length of the island to 250 yards, where there is placed, on the south side of the passage, a black spar buoy, marking the channel. **Cassidy Shoal**, near the west end, is marked by a black spar buoy. 45 Westward, $2\frac{3}{4}$ miles from the northeast extremity of Howe Island, is the entrance to shallow marshy indentation $2\frac{3}{4}$ miles in length named **Johnson Bay**.

Bateau or North Channel leads for the full length of Howe Island, between the latter and the main Canadian shore.

Chart 58.

Grog is a small island off the mouth of Johnson Bay and on the north edge of Bateau Channel.

Shoal.—A shoal, with a depth of 6 feet over it, lies in the middle of the 5 channel, 6,700 feet below Grass Creek Island.

Chart 77.

The extreme western point of Howe Island long and narrow, known as **Spit Head**, has shoal water extending 5 cables off it.

Buoy.—On the southeast side of Howe Island, $1\frac{3}{4}$ miles, 199° from Burnt Island light, is moored a spherical buoy with red and black horizontal bands, on the middle of a 13-foot shoal and about 7 cables, 135° , from the latter a black spar is moored on a patch with 10 feet least water over it.

Cold Bath Shoal.—**Light-buoy.**—This shoal, rather nearer the southwest end of Howe Island than Oak Point of Wolfe Island, has a depth of 9 feet on it, and is marked by a red cylindrical light-buoy, 46T, showing a *flashing white* light, distant $3\frac{1}{2}$ miles eastward from Knapp Point light. (See page 73.)

From the narrow north point of Howe Island, a bank, with 2 feet least water on it extends three-quarters of a mile southwestward.

Gates Island, close to the Canadian shore northwest of Howe Island, is 5 miles eastward of **Point Frederick**, the east entrance point of Kingston Harbour, the latter surmounted by a martello tower with red roof, known as **Fort Frederick**. The shore between Sheriff Point and Gates Island attains an elevation of 140 feet; the portion between the latter and Kingston rises to a height of 105 feet.

Milton Island is situated $3\frac{3}{4}$ miles eastward from Point Frederick and three-quarters of a mile northward of Knapp Point lighthouse on Wolfe Island. Close east of Milton Island is **Milton Point**.

The Spectacles, in two parts, bushy and about 2 feet above the water, lie a third of a mile southeast of Milton Island.

Cedar Island, wooded, and separated from the main shore by a channel used by vessels of light draught, lies three-quarters of a mile southeast of Point Frederick, and has an old martello tower erected on it. **Point Henry**, 100 feet high, with smooth grassy slopes, and surmounted by Fort Henry, is close east of Point Frederick, the inlet east of it being called **Deadman**, and that west of it, **Navy Bay**. (For description of Kingston, see page 77.)

Light.—A *fixed red* light is shown, at an elevation of 25 feet, from a red steel skeleton structure surmounted by a red lantern on the southwest extremity of Cedar Island about 500 feet from the martello tower. The light is unwatched.

Chart 58.

Wolfe Island, in Canadian waters, has a total length of 18 miles, its north-eastern and narrow portion rising to a height of 60 feet. As stated on page 70, its northeast extremity, known as Quebec Head, is separated from Blanket Shoals of Francis and Arabella Islands by Wolfe Island cut, 300 feet wide and 16 feet in depth, connecting the Canadian and American channels.

Wharf.—At Quebec Head is a wharf with a face 60 feet in length.

Light.—On **Quebec Head** is erected a white square building, which, at a height of 37 feet, exhibits a *fixed white* light, visible 10 miles.

Chart 77.

The north coast of Wolfe Island, from this cut to Knapp Point distant $10\frac{1}{2}$ miles, (*see* below), is broken by several shallow bays, the largest, running in $1\frac{3}{4}$ miles with **Holliday Point** on its western side, being nearly midway. From Holliday Point a shallow reef extends a quarter of a mile. Between Quebec 5 and Holliday Points, the outer coast is steep to, and, in the clean bay between them, vessels will find shelter in 3 fathoms, in southerly gales.

Oak Point, rather nearer Holliday than Knapp Point, is rendered conspicuous by the bunch of trees on its extremity, in contrast with the bare neck behind it. The point has a patch with 12 feet water on it, lying 400 yards northeast 10 of it, and another, with 15 feet water, is situated three-quarters of a mile west of that point. The outer end of a bank with depth of 9 feet also lies three-quarters of a mile east from Oak Point. Cold Bath Shoal and buoy, described on page 72, lie off this point.

Knapp Point is situated $10\frac{1}{2}$ miles westward from Quebec Head, and, 15 from the bays between, flats with less than 14 feet water on them, extend a little beyond the line joining those points. The point, and also Brophy Point, lying a quarter of a mile east of it, are densely wooded, the trees coming close down to the lighthouse. The northwest side of Knapp Point is steep to. Knapp and Brophy Points are extremities of what is known as **Abraham Head**. **McDon-** 20 **nell Bay**, quite shoal, lies on its eastern side and **Brown Bay**, deeper, on its western side.

Light.—On Knapp Point is erected a white square tower, which, at a height of 28 feet above the water, shows a *fixed white* light, visible 10 miles in clear weather. 25

Fog signal.—A hand horn answers signals from passing vessels.

Bayfield Shoal.—**Buoy**.—An isolated rocky patch with depth of 8 feet, and marked by a black and red horizontally-striped spar buoy, lies one mile westward of Knapp Point lighthouse.

Garden Island, three-quarters of a mile long northeast and southwest, and 30 one-third of a mile in breadth, lies $1\frac{1}{2}$ miles southward of Kingston Harbour and a third of a mile from Wolfe Island. The island is low, with several houses on its northeast portion. The southwest end of Garden Island is wooded to the water.

Ferguson Point is three-quarters of a mile east of Garden Island, and 3 35 miles southwest of Knapp Point lighthouse, and between the latter and Ferguson Point, the low coast dotted with trees, takes the form of a broad bight, Brown Bay, with depths under 12 feet. **Dawson Point** is a mile and a half eastward of Ferguson Point. The flats connecting Garden Island, Simcoe Island, and the Wolfe Island shore, have 3- and 6-foot patches midway between the former 40 islands. The shallow bight enclosed by Garden Island and Ferguson Point is known as **Barrett Bay**. On its south side is **Wolfe Island Village** (**Marysville**) with about 300 inhabitants.

Wharves.—At Wolfe Island Village is Hogan's coal dock with a face 90 feet in length; in 1935 a channel 1,600 feet long and 40 feet wide, leading to the 45 wharf, was dredged to a depth of 9 feet. A turning basin, in front of the dock, 140 feet long and 100 feet wide, was dredged to the same depth. In 1934 a channel 1,000 feet long and 150 feet wide, leading to the ferry wharf, was dredged to a depth of 8 feet. Spoor's wharf, near the west end of Wolfe Island and facing Bateau Channel, is 100 feet long with an ell end 60 feet in length. In 1935 the 50 area in front of the dock and extending to deep water, with small basins at each side of the dock, was dredged to a depth of 6 feet.

Chart 77.

Ferry.—A ferry for passengers and autos plies between Kingston, Simcoe Island (Spoor's wharf), Garden Island and Wolfe Island Village on an hourly schedule.

- 5 **Bass Rocks**, above water, lie 300 yards north of Wolfe Island Village ferry wharf.

The eastern corner of Barrett Bay is connected to Bayfield Bay on the southeast side of Wolfe Island, by a narrow canal $2\frac{1}{2}$ miles long formerly used by the ferry steamer plying between Kingston and Cape Vincent, but now almost closed.

(For Simcoe Island, and the southwest coast of Wolfe Island, *see* pages 86, 87.)

- Bayfield Bay.**—From Quebec Head, the coast of Wolfe Island trends southeasterly, a third of a mile to a point with a cottage and a boathouse upon it. Thence, the coast turns abruptly, and runs, with an outward curve, 8 miles to
15 **Bayfield Island** in the mouth of a shallow bight $1\frac{1}{3}$ miles in diameter, named Bayfield Bay, from the bottom of which the narrow canal, mentioned above, formerly led to Barrett Bay on the opposite coast of the island.

Light-buoy.—A red buoy, showing a *flashing red* light, is moored on the west side of the channel off Bayfield Island.

- 20 **Wharf.**—At Horne Point on Wolfe Island, situated about 2 miles west of Carpenter Point, is a Government wharf with a pierhead 60 feet in width and a depth of 11 feet along the face.

Ferry.—A ferry for passengers and autos operates between Horne Point (Alexandria Point) on the south side of Wolfe Island and Cape Vincent, N.Y.
25 A good automobile road connects Horne Point and Wolfe Island Village.

- Carleton Island**, 60 feet in height, $2\frac{1}{4}$ miles long east and west, and one mile broad, is situated southeast of Bayfield Island, $9\frac{3}{4}$ miles westward from Clayton. By the passage 800 feet wide, south of the island, defined by two black spar buoys, a vessel can carry 12 feet, but, the main channel north of the
30 island is recommended to vessels drawing over 10 feet. A bank extends three-quarters of a mile from the eastern extremity of the island.

Light.—On the northwest point of Carleton Island is erected a white, square, pyramidal, skeleton tower, from which is exhibited, at a height of 107 feet above the water, a *flashing white* light, *every 3 seconds*, visible 11 miles. It
35 is not visible when bearing between 230° and 0° . The light is unwatched.

From Bayfield Island and **Carpenter Point** southwest of it, shoal water extends half a mile, to avoid which vessels should pass close to Carleton Island lighthouse.

- Hinckley Point.**—From Bayfield Bay, the southeast coast of Wolfe Island
40 trends southwest 4 miles, and, then, easterly one mile to a low projection with a villa residence upon it, named Hinckley Point, thus, forming on the north side of the latter, a shallow indentation called **Button Bay**. The best water is on the southeast side of this bay, where there is excellent shelter from southwest gales.

- 45 **Wreck.**—It has been reported that a wreck, with less than 6 feet of water over it, lies in Button Bay, about 2,200 feet west-northwestward of the extreme of the sharp point close westward of Hinckley Point.

Chart 77.

Hinckley Flats Shoal, with depths ranging from 4 to 12 feet, extends from the point of that name northeasterly nearly $2\frac{1}{2}$ miles.

Light-buoy.—A red light-buoy, 22, showing a *flashing red light every 4 seconds*, is moored on the channel edge of the outer portion of this rocky spit, 5 one mile southwest of Carleton Island lighthouse. This buoy also bears 23° and is distant 5 miles from Tibbetts Point light (*see* page 77) and a line joining them leads along the southeast edge of this extensive spit.

Leading lights.—Near the end of **Irvine Point** are located two masts, exhibiting at heights of 28 and 45 feet, *fixed white lights*, visible, in the line of 10 range, 3 miles.

These two lights in line, 14° , lead past Hinckley Flats Shoal. The masts are surmounted by white diamond-shaped daymarks.

Bear Point, again referred to on page 87, is the southern extremity of Wolfe Island, and distant 5 miles southwestward from Hinckley Point, the shore 15 between being fairly steep to. Bear Point is composed of rock, and 10 feet high. The southeast shore for $1\frac{3}{4}$ miles northeastward from the extremity of the point is of a dark cliffy character. At the above distance it is succeeded by a low bay, between which, and the peninsula of Hinckley Point, the shore again rises in an earth cliff 50 feet high. 20

Shoal.—A third of a mile southward from Bear Point is an isolated shoal with 9 feet of water on it; it is marked by a red spar buoy moored on the southwest extreme. (For southwest coast of Wolfe Island, *see* page 87).

Feather Bed Shoal.—From Mellen Bay (*see* page 69) the coast of the State of New York trends westerly, $2\frac{1}{3}$ miles, and, then, a little more southerly 3 miles to Cape Vincent. From this broad outward bend of the coast, a bank extends one mile, its western portion being just awash, and termed Feather Bed Shoal.

Light-buoy.—The western edge of this shoal is marked by a black conical, buoy, 29, exhibiting a *flashing white light every 4 seconds*.

United States chart 17.

30

Cape Vincent Harbour, situated about $2\frac{1}{2}$ miles below Lake Ontario, has a wharf frontage of about $1\frac{1}{2}$ miles. There is deep water to within a short distance of the wharves, but these will not accommodate vessels drawing more than 10 to 12 feet of water. A breakwater, affording shelter and mooring for vessels, is built parallel to and 500 feet from the railroad wharf. The length 35 of the main breakwater is 1,331 feet and of the shore return 50 feet. The breakwater is supplied with mooring posts and vessels can lie on both sides of it. It affords a convenient mooring place for downbound vessels reaching the river at night or in thick weather, at which times navigation of the upper river is dangerous, and also for upbound vessels arriving at the head of the river when 40 weather conditions make it unsafe to venture into the open lake. In 1933 there was a least depth of 17 feet in the approach to and around the breakwater over a width of 100 feet at the upper end widening to 250 feet at the lower end on the mainland side, and depths of $23\frac{1}{2}$ to 25 feet along the river side. During the summer Cape Vincent has steamboat connection with the principal ports between 45 Kingston and Ogdensburg, and a ferry runs daily from Kingston.

Lights.—**Breakwater, east end.**—On this end of Cape Vincent breakwater is erected a white square tower exhibiting, at a height of 28 feet above the water, a *fixed red light*.

United States chart 17.

Breakwater, west end.—A similar tower, showing also a *fixed red* light, is erected on the west end of the breakwater. These lights are visible from a distance of 12 miles.

5 A log boom in the harbour behind the breakwater is marked by three black barrel buoys with *fixed green* lights on the northerly line and by black barrel buoys, with *fixed white* lights, on the easterly line.

(1) The term "harbour", when used in these regulations, applies to all that portion of the St. Lawrence River lying within the following boundaries:
 10 Beginning at a point on the harbour face of the breakwater at its easterly end and extending in a straight line along the harbour face of the main part of the breakwater and in extension thereof westerly approximately 2,400 feet; thence at right angles to the above-described line southerly to the northeast corner of the "L" dock at the foot of Market Street, approximately 300 feet; thence
 15 easterly along the dock face and shoreline to a point in a line at right angles to the breakwater at its easterly end; and thence along this last-described right angle line to the point of beginning.

(3) Vessels shall not exceed a speed of 8 miles per hour in the harbour.

(4) Vessels shall observe the following rules in mooring to the breakwater:
 20 The first self-propelled vessel stopping at the harbour for shelter will proceed to the upstream end of the breakwater and moor along either side of it. All similar vessels entering later will place themselves in a compact position close to those preceding them. Passenger vessels will, in general, have preference as to location of moorage. Sailing craft will so locate themselves that they will not
 25 lie in the way of other vessels entering the harbour. All vessels of every description will place themselves so as not to interfere with any work of reconstruction or repair that may be in progress at the time.

(5) The use of chains in making fast to the breakwater is prohibited. Lines must be attached to the snubbing posts only, and outboard anchors taken in.

30 (6) Vessels with other craft in tow will, if practicable, at once moor them compactly along the breakwater, either taking in the tow lines or placing the slack in them upon the breakwater in such a manner as not to interfere with other vessels. If necessary to moor alongside other vessels moored to the breakwater, the tow lines shall be taken in or disposed of in such a manner as not to interfere
 35 with the departure of vessels moored between them and the breakwater.

(7) Vessels of every description mooring to the breakwater, must place suitable fenders between themselves and the breakwater to protect the timber walings on the breakwater from damage.

(8) The unloading of freight of any class upon the breakwater is expressly
 40 prohibited, except in accordance with special permission.

(9) Each and every vessel made fast to the breakwater, or anchored in the harbour without a line made fast to the shore or shore dock, must have at least one experienced person upon it during the entire time said vessel is thus moored in the harbour.

45 *Chart 77.*

Tibbetts Point, on the shore of Lake Ontario, is situated $2\frac{1}{2}$ miles southwest from Cape Vincent Harbour, the park-like coast between, 60 feet high, being nearly straight, and steep to. The point is composed of dark brown rock, and its tall lighthouse, when the sun is on it, is conspicuous from the lake.

Chart 77.

Tibbetts Point and Bear Point of Wolfe Island (pages 75, 87), may be considered as the southeast and northwest entrance points of South, or Main Channel of the St. Lawrence River.

Light.—On the extreme of Tibbetts Point, is erected a white round tower 59 feet high, which at a height of 69 feet, exhibits an *occulting white light, every 10 seconds*, visible, in clear weather, from a distance of 16 miles.

Fog signal.—At Tibbetts Point lighthouse, a diaphone, in thick or foggy weather, sounds a blast of *three seconds every half minute*.

Telephone.—There is long distance telephone connection at this station. 10

Shoal.—A bank with $17\frac{1}{2}$ feet water on it lies with its north end bearing 246° , three-quarters of a mile distant from Tibbetts Point light. (For coast south of Tibbetts Point, *see* page 88.)

Chart 59.

Kingston, at the division of the St. Lawrence River from Lake Ontario, 15 and standing upon the west entrance point of Cataraqui River at a height of 60 feet, had, in 1941, a population of 29,545. Its distance, by the natural waters and canals, from the lower entrance of Lachine Canal, Montreal, is about 182 (158 nautical) miles. From abreast Quebec customs house, it is distant nearly 344 (299 nautical) miles. By a branch of the Canadian National Railways 20 $2\frac{1}{4}$ miles in length, Kingston has connection with the main line. It is also the terminus of the Bay of Quinte Branch of the Canadian National Railways, and Kingston and Pembroke Branch of the Canadian Pacific Railway. Its distance by rail from Montreal is $175\frac{1}{4}$ miles, and, from Toronto $163\frac{1}{4}$ miles. The city is the seat of Queen's University. The Royal Military College is situated on 25 Point Frederick. The most conspicuous buildings in Kingston are the dome of the city hall, with its illuminated clock, which serves as a lighthouse, the tall square tower of the St. Mary's Roman Catholic Cathedral, the dome of St. George's Anglican Cathedral, and several other church spires, the dome of the penitentiary, Rockwood asylum, a grain elevator, and several martello towers. 30 A depth of $17\frac{1}{2}$ feet can be carried into Kingston Harbour, on the line of the leading lights.

A bridge, called **La Salle causeway**, crosses Kingston Harbour, half a mile north of Point Frederick, and, through which, by means of a lift 150 feet wide, vessels drawing 12 feet can proceed to the Canadian Pacific Railway 35 wharf, or proceed to Ottawa and Perth by the Rideau Canal system if drawing less than 5 feet. (*See* page xxvii).

Inner harbour.—The area lying just north of La Salle causeway extending 1,200 feet along the bridge and from 450 to 550 feet wide, has been dredged to 14 feet. 40

Vessels dock on the north side of the causeway where, sheltered by that structure, there is good dockage for 950 feet.

Anglin Bay.—A channel, 100 feet in width at the narrowest part, leading from the inner harbour to the Canadian Pacific Railway dock in Anglin Bay has been dredged to 18 feet with the same depth at the end of this dock. There 45 is a depth of $14\frac{1}{2}$ feet along the face of Saword's coal dock. The slip on the west side of the bay has been dredged to 12 feet and the channel to Davis' dry dock to $10\frac{1}{2}$ feet.

Chart 59.

Buoys.—A red spar is moored in 12 feet of water on the east side of the south approach to the bridge, and 250 feet south of the east guard pier.

Dredged channel.—Buoys.—Beacons.—The dredged channel, with 17½ feet of water, is marked by a red spar buoy moored opposite the northeast corner of the Canadian Locomotive Company's wharf, by a red spar and a black spar abreast the martello tower, by a red spar a little outside and a similar buoy a little inside the Richardson elevator wharf. The east side of the channel leading to the lift bridge over LaSalle causeway is marked by a red spar buoy. The channel to the Richardson elevator wharf is marked by two diamond-shaped daymarks, with the front one on the northeast corner of the drier building next to the grain elevator and the rear one on the east face of the Crawford Coal Company's shed.

Kingston has steamboat connection by the Canada Steamship Lines, with Hamilton, Toronto, Montreal, Quebec and the principal places between. Other lines of steamboats call at various places in Canada and the United States, between Kingston and Montreal. A ferry steamer plies daily to Cape Vincent.

Period of navigation.—The average date of the opening of navigation is April 14; that of the closing December 18.

Storm signals are exhibited from a mast near the Government dry dock (*see* page xvi).

Radiotelegraph station.—A radiotelegraph station, open during the season of navigation, is established at Kingston, on the heights above Fort Henry. The signal call is VBH. Reports respecting dangers to navigation on Lake Ontario and the St. Lawrence River, above Lake St. Francis, and weather reports are transmitted at 10·50 a.m. and p.m.

Dry docks.—The Government dry dock is situated 600 yards south of the city hall. Its length is 352½ feet which may be increased by 23½ feet if the floating caisson is placed in the outer stop, breadth of entrance 55 feet and depth on sill 13¾ feet at the extreme low water of 1895.

A private dry dock, suitable only for small vessels, is situated above the bridge and known as Davis dry dock. It is 213 feet long, 43 feet wide, with a depth of 9 feet on the sill.

Rideau Canal.—The Ottawa and St. Lawrence Rivers are connected, at Kingston, by the Rideau Canal, 126¼ miles in length. (For a description of locks, depths, and other details, *see* page xxix of this volume.)

Lights.—Kingston city hall.—The illuminated clock of the city hall serves as a *fixed white* light, elevated 107 feet above the water, visible in clear weather from a distance of 9 miles.

Barriefield common range.—The front red tripod, with white oval beacon on top, is erected 370 feet east of La Salle causeway, and, at a height of 48 feet above the water, exhibits a *fixed white* light, visible 14 miles.

The back similar structure stands 500 yards, 37°, from the front beacon, and, at a height of 75 feet above the water, exhibits a *similar* light, visible also 14 miles in clear weather. The white oval beacons or targets, when in one are also in line with the southeast edge of St. Mark Anglican Church square tower in Barriefield. These lantern lights show over a small arc on each side of the alignment, which leads northwest of Myles, Carruthers, and Point Frederick Shoals, with a depth of 17½ feet.

Chart 59.

Wharves.—Depths.—The Government wharf, with 15 feet of water at the outer end, extends 600 feet from the west side of the shallow bay immediately west of the penitentiary grounds. From the landing of the penitentiary at the west end of Kingston, the wharves are almost continuous for 2 miles to the bridge, having depths ranging from 12 to 20 feet and a total frontage of 4,000 feet. Half a mile below the penitentiary is the Frontenac Coal and Wood Company's dock with 14 feet of water alongside, and the slip inside the dock has been dredged to 13 feet. Queen's University dock lies just above **MacDonald Park** and along the front of the dock it has been dredged to 13 feet. 5 10

The Kingston Shipbuilding Company's dock with 20 feet of water along the outer end is located two-thirds of a mile from La Salle causeway. The Canadian Locomotive Company's dock north of the last-mentioned has 15 feet of water along the outer face and the berth 80 feet wide along the outer end of the north side has been dredged to 13 feet. 15

Next in order is Swift's dock; the channel of approach and the berth at the end have been dredged to $13\frac{1}{2}$ feet and the berth on the north side to $12\frac{1}{2}$ feet. The approach channel to the Rockport Navigation Company's wharf, 75 feet wide, has a depth of 11 feet and the berth on the south side, 100 feet long and 50 feet wide, has a depth of 10 feet. Richardson's wharf, with an elevator, lies about 1,500 feet south of La Salle causeway; the berth on the south side of this dock has a depth of $14\frac{1}{2}$ feet; the outer end of the slip on the north side, for a width of 100 feet, has been dredged to 16 feet and the inner end to $13\frac{1}{2}$ feet. The dredged cut leading to the dock is marked by spar buoys (*see* page 78). R. Crawford's dock has 11 feet of water at the outer end. The two docks of the Canada Steamship Lines are located 800 and 1,000 feet below the causeway. There is 12 feet of water at the outer end of the upper wharf and the same depth for 325 feet along the south side of the lower wharf. 25

Carruthers and Frederick Point Shoals.—A bank half a mile long northeast and southwest, extends from abreast the Government dry dock towards the shore a little north of Frederick Point, and a rocky ridge under 6 feet makes off 400 feet from the point. The southwestern and shoaler portion, with 8 feet water on it, is named Carruthers, and the northeastern part with 11 feet is known as Frederick Point Shoal. Between Carruthers Shoal and Frederick Point, there is a passage with depth of 13 feet, known as the **Eastern Channel**, but the more direct and slightly deeper channel, with $17\frac{1}{2}$ feet of water, is between the bank and the city, the line of Barrieffield common range lights leading just clear of the bank extending from the city. 30 35

Buoys.—A red spar marks the southwest extreme of Frederick Point Shoal; the southeast side of Carruthers Shoal is marked by a black spar buoy and 40 the southwest extreme by a red spar buoy, and a black can buoy, moored 850 feet southeastward of Swift's dock, marks a 9-foot spot.

Intake pipe.—Two red wooden spar buoys mark the location of the city's intake pipe. The outer buoy lies in the line of the east side of West Street, half a mile from Waterworks wharf, the inner buoy about a quarter of a mile from the same wharf. 45

Magnetic disturbance.—The normal variation of the compass for the shores adjacent to Kingston Harbour is about 11 degrees *west*, but, along the front of the city, it is not less than 18 degrees in the same direction. At the Government dry dock, it is as much as 30 degrees *west*, and abreast the penitentiary it is 18 degrees *east*. A short distance west of Rockwood asylum, the variation is again normal. Midway between Frederick Point and Garden Island, the amount of *westerly* variation is 20 degrees. At Simcoe Island, it is normal. 50

Chart 59.

The effect to the mariner, is, that the bearings, if magnetic, of the line of the Kingston leading lights, and those of the buoys in the vicinity, may differ from those actually observed by him. Moreover, extra caution is necessary 5 in approaching or leaving Kingston in thick weather on a course.

Little Cataraqui Bay.—From Kingston, the shore, rising to a height of about 60 feet, trends westerly $2\frac{1}{3}$ miles to **Samson Point** on the east side of Little Cataraqui Bay, which runs in three-quarters of a mile, with depths under 9 feet.

10 **Elevators.**—The elevator of the Kingston Elevator Company Limited is located in Little Cataraqui Bay. It is a long narrow structure having a capacity of 2,500,000 bushels, with unloading facilities on one side and loading-out facilities on the other side. The slip for unloading the upper lake boats is on the downstream side of the elevator and is 700 feet long, 300 feet wide, and dredged 15 to 23.5 feet. The slip for loading the canal-size boats is 600 feet long, 250 feet wide, and dredged to 17 feet. Unloading facilities consist of two traveling marine towers, by means of which all the holds may be reached without moving the ship. Shipments may also be made by rail as the Canadian National Railways have built a spur line to the elevator.

20 **Buoys.**—The turning basin, 1,020 feet long and 380 feet wide along the west side and off the south end of the elevator pier, is marked by three black spar buoys.

Breakwater.—For the protection of the berths at the elevators a breakwater 2,600 feet long has been built from Carruthers Point. The outer end is 25 2,600 feet 75° from the front light of Portsmouth leading lights.

Light-buoy.—A black cylindrical light-buoy, showing a *flashing green* light, is moored off the east extremity of the breakwater.

Lights.—Portsmouth leading lights, at Little Cataraqui Bay, about three miles west of Kingston, lead in from Lake Ontario to the north channel 30 approaching Kingston and the head of St. Lawrence River. The front light, on a white, square wooden structure, 32 feet above the water, on the east extremity of **Carruthers Point** (the westerly entrance point of Little Cataraqui Bay), is *fixed green*, visible in the line of range and also down the channel towards Kingston. The rear light, on a white, square steel skeleton tower, 101 feet 35 above the water, on the north shore of the bay 3,800 feet 18° from the front light, is *fixed white*, visible 18 miles. Vessels approaching from the lake may head for either Ninemile Point or Fourmile Point light until the range comes on; the range leads between Melville Shoal and the middleground into the north channel, with nowhere less than 4 fathoms. When Snake Island is abeam, the 40 range may be left and a course shaped to lead north of Penitentiary Shoal. (See below).

Intake pipe.—From the south extreme of Carruthers Point an intake pipe extends south 1,860 feet into the lake. A large sign marks the shore end of the pipe and mariners are warned not to anchor in its vicinity.

45 **Myles Shoal**, with 8 feet of water on it, is an isolated patch, lying nearly in the middle of the channel, and a mile northwestward from Garden Island.

Buoy.—A spar buoy, painted with red and black horizontal bands, is moored on Myles Shoal, and bears 221° , distant $1\frac{1}{4}$ miles from Frederick Point.

Chart 59.

Penitentiary Shoal, with 10 feet of water on it, lies a mile southeasterly from Samson Point, and $1\frac{1}{4}$ miles westerly of Myles Shoal.

Light-buoy.—A cylindrical light-buoy, 61 T, painted with red and black horizontal bands and exhibiting a *flashing white* light, is placed on Penitentiary Shoal.

Directions, Alexandria Bay to Kingston.—(For directions Prescott to Alexandria Bay see page 61.)

Charts 58, 77.

Proceeding upstream from Alexandria Bay a vessel passes south of Pullman 10 Shoal light and steers 219° which course leads about half a cable northwest of Comfort Island light. When a cable past the light, steer 235° for 2.4 miles or until one cable below the bridge, when alter course and steer 231° for 2.6 miles, passing between Granite State Shoal light and Rock Island light. When 2 cables above Rock Island light steer 239° for $2\frac{1}{2}$ miles heading on Chapman 15 Shoal light and passing red spar buoy 18 close to starboard and light-buoy 25 to port. When abreast the small rocks east of North Colborne Island steer 228° for 6 cables when alter course and steer 241° until abreast Bartlett Point light. Now steer 246° until the red light-buoy at the southeast end of Wolfe Island dredged cut comes in line with Quebec Head light, when haul up for the 20 former, steering 310° and leaving it to starboard, pass between the buoys marking the cut, until abreast the light.

Round the light on Quebec Head at a cable and steer 270° for 7.7 miles for Cold Bath Shoal light-buoy 46 T. Passing south of this buoy steer 265° with Knapp Point light a little on the port bow. Pass a quarter of a mile north of 25 this lighthouse, and keep Cold Bath Shoal light-buoy *well* open north of Knapp Point light, which leads north of Bayfield Shoal red and black striped buoy. Oak Point in line with lighthouse, 84° , also leads north of Bayfield Shoal.

Thence, pass a quarter of a mile south of Cedar Island, and steer for the southwestern and outer of the five red spar buoys marking the southwest edge 30 of Carruthers and Frederick Point Shoals. Round this buoy at the distance of 100 yards and bring Barriefield Common leading lights in line ahead, 37° , which will lead in, with a depth of $17\frac{1}{2}$ feet. A vessel drawing less than 10 feet may cross the above shoals by keeping the dome of St. George's Cathedral over the south end of Swift's dock, 301° . With local knowledge, a depth of 13 feet may 35 be carried to Montreal Transportation Company's wharf by passing between the above shoals and the Frederick Point shore.

Kingston to Alexandria Bay.—On leaving Kingston Harbour, steer 217° with the Barriefield range lights in line, astern, until past the outer red spar buoy marking Carruthers Shoal, when haul southward and eastward, and steer 68° 40 passing a quarter of a mile south of Cedar Island, and northward of Bayfield Shoal black and red striped buoy. *At night*, to ensure this, keep Cold Bath Shoal light-buoy, 46 T, *well* open north of Knapp Point light, as the two in line, 78° , lead over this shoal with 8 feet water on it. Oak Point in line with Knapp Point, bearing 84° , also leads north of Bayfield Shoal. Passing a quarter of a mile north 45 of the latter lighthouse, keep Cold Bath Shoal light-buoy, 46 T, (distant 3 miles), a very little on the port bow, steering 85° . Pass close south of it and steer 90° for Quebec Head light, distant 7.7 miles.

Haul sharply southward into the entrance of Wolfe Island dredged cut, passing a cable off the light at Quebec Head, and keep the light-buoy at the 50 other end a very little on the port bow until through. Thence, keep Quebec Head light in line with the light-buoy, steering 130° , until three-quarters of a mile

Charts 58, 77.

past the latter, to be clear of Blanket Shoals (*see* page 70). Now haul eastward with Bartlett Point light a little on the starboard bow steering 66° until abreast the light when alter course and steer 61° until $2\frac{1}{2}$ cables above Chapman Shoal light. Now steer 48° until abreast the rocks east of North Colborne Island and then steer 59° for $2\frac{1}{2}$ miles. When $2\frac{1}{2}$ cables above Rock Island light steer 51° for 2.6 miles to a point one cable below the bridge and then steer 55° for 2.4 miles with Comfort Island light a very little on the starboard bow. When a cable above Comfort Island light, steer 39° for nearly a mile passing half a cable northwest of the light and close south of Pullman Shoal light; when abreast this light, alter course 3° and head 36° passing between Frontenac Shoal red spar buoy and Broadway Shoal red and black horizontally striped buoy and close northwest of Sunken Rock Shoal light and nearly a cable from Sunken Rock light. When abreast Sunken Rock light, proceed thence as directed on page 62 if bound downriver, or pass south of Broadway Shoal buoy to the wharf at Alexandria Bay.

Rockport to Kingston by Middle Channel.—(For directions, Prescott to Rockport, *see* page 61.) From Rockport proceed westward through Raft Narrows, the general course being 252° , keeping the main shore well aboard. Pass 80 yards north of the beacon on Wood Island and haul sharply southward into Fiddlers Elbow Channel between Wood and Lynedoch Islands. Pass between the black spar off Lynedoch Island light and the south extremity of Lynedoch Island. From Lynedoch Island light, steer 240° for 3 miles or until 300 yards off Island No. 70 A, lying off Grand View Park, passing between the red spar, 25 marking Steeple Shoal and the black spar southeast of it, and south of the red spar lying north of Island 70 A.

From the position north of Island No. 70 A steer 236° for nearly 3 miles, or until about a cable eastward of the red spar buoy, moored south of Blood-letter Island, taking care to pass about midway between the red and the black 30 spars, marking the channel. Pass northwest of Niagara and Camelot Islands (marked with a beacon) steering 243° , as far as the red spar buoy, marking the southwest extreme of the shoals extending from the Dumfounder Islands group, whence steer 277° to a point about 750 feet north of the Punts Islands beacon. Now steer 229° to a point half a cable south of Bass Rock Island, 35 marked by a beacon. From thence steer 238° for half a mile, passing between a red spar and a black spar buoy. When abreast the black buoy steer 244° for $6\frac{3}{4}$ miles, passing between a black spar and a black and red horizontally-striped buoy, or until half a mile northward of Holliday Point, when Cold Bath Shoal light-buoy, distant 3 miles, may be steered for, as directed on page 81. (If from 40 Rockport to Kingston by the North Channel, *via* Gananoque *see* below.)

There is a deep unbuoyed passage between the Punts Islands and those south of them, **Barge** and **Gig Islands**, used by mariners who are locally acquainted.

If proceeding to Gananoque, a vessel from abreast the red spar north of 45 Island 70 A may steer 254° for Gananoque Narrows light, distant $1\frac{1}{4}$ miles, passing north of a black spar, and south of the red spar buoy in the narrows. Having passed south of the cluster of boulders (*see* page 65) a third of a mile west of Gananoque Narrows lighthouse, a 271° course may be steered with Jackstraw Shoal light a little on the starboard bow and the day beacon a little on the port 50 bow. Pass between them, and, thence, on the same course, for the wharves at Gananoque, with Gananoque Narrows light seen between the day beacon and Jackstraw Shoal light, astern. (For directions, Gananoque to Kingston, *see* page 83.)

Charts 58, 77.

Kingston to Rockport, by Middle Channel.—Proceed as for Alexandria Bay until 3 miles east of Cold Bath Shoal light-buoy and half a mile north of Holliday Point, whence haul eastward, and steer 64° , for $6\frac{3}{4}$ miles, or until abreast the black spar buoy southwestward of Bass Island, having on this course passed to the northward of a black spar buoy and south of a red and black horizontally-striped buoy. From this point steer 58° for half a mile until abreast Bass Rock Island and thence steer 49° for $1\frac{1}{2}$ miles to about a cable north of the Punts Island beacon; haul sharply to southeastward steering 97° , until south of the red spar at the southeastern edge of the Dumfounder Group, 10 and pass north of Camelot (marked with a beacon) and Niagara Islands, to about midway between the latter and the red spar, south of Bloodletter Island. Hence steer 56° , passing between the red and the black spars, marking the shoals, west of Grand View Park. When north of Island No. 70 A, lying off Grand View Park, steer 60° to pass between the red spar on Steeple Shoal and the black spar 15 on the 7-foot spot, southeast of it, with Lynedoch Island light a very little on the starboard and Steeple Shoal red spar buoy on the port bow, and into Fiddlers Elbow Channel, passing north of the black spar off Lynedoch Island light.

Proceeding through the Elbow, pass southeast of Wood Island, turning eastward into Raft Narrows, passing north of Georgina Island. Keep the 20 mainland shore aboard, until down to Club Island, the general course being 72° , when berth at Rockport wharf, or proceed northeastward, as directed on page 62.

Gananoque to Rockport.—From the former, steer for Gananoque Narrows light seen between the day beacon and Jackstraw Shoal light, 91° ; pass 25 between the light and the day beacon, and south of the cluster of boulders, a third of a mile west of Gananoque Narrows (*see* page 65). Pass through the latter leaving the red spar buoy on the port, and a black spar buoy on the starboard hand. Thence, steer 74° to pass south of the red spar buoy lying north of Island No. 70 A, and continue for Lynedoch Island light, as directed above. 30

Gananoque to Clayton.—Vessels of light draught pass through Admiralty Group (*see* page 70) through the dredged buoyed cut west of Tidds Island and west of the black spar buoys off Melville Island. The track now passes between the black light-buoy, and the red spar buoy at Juniper Island, thence southward between Grindstone and Francis Islands with the east end of Blanket Island 35 seen midway between Whiskey Island and the small rock 300 yards west of it. When Gull Island is reached a vessel may haul over for Clayton.

Gananoque to Kingston.—Pass north of the black spar buoy moored on the 5-foot patch southeast of Little Island; thence, close south of Pike Island, and northwest of the black spherical buoy lying 300 yards northeast of Spectacles Shoal light. Thence between Spectacles Islands and Spectacles Shoal light; northwest of the black spar buoy 380 yards northeast of Red Horse Rock light, and southeast of the two red spherical buoys off Point Island. 40

Now, haul south, and pass between Red Horse Rock light, and on either side of the striped red and black buoy on Anchor Shoal; thence, between Burnt 45 Island light and the similarly-coloured spherical buoy on Tin Cap Shoal, passing west of Mermaid Island and following the southeast coast of Howe Island until northwest of Holliday Point, whence, proceed to Kingston, as directed on page 81.

There is also a passage for light draught vessels northwest of Howe Island, and known as Bateau Channel (*see* page 71), entered between Red Horse Rock 50 light and Howe Island. Follow the track as marked on the chart, be guided by the buoys, and join the other track south of Milton Island.

Charts 58, 77.

Kingston to Gananoque.—Vessels will proceed as directed on page 83 until northwest of Holliday Point, when they will follow the southeast coast of Howe Island for $6\frac{1}{4}$ miles, until abreast Burnt Island light. Now, pass between it and the striped black and red spherical buoy marking Tin Cap Shoal (*see* page 71). Pass on either side of a similarly-coloured buoy on Anchor Shoal, and north of Red Horse Rock light; thence, southeast of two red spherical buoys marking the bank from Point Island, and north of the black spar buoy moored 380 yards northeast of the lighthouse. Thence, pass between Spectacles Shoal light and 10 Spectacles Rocks and northeast of a black buoy 300 yards farther on, keeping afterwards near the mainland shore, close south of Pike Island, and north of the black spar buoy moored southeast of Little Island, and, thence, to Gananoque wharves. (If continuing on northeast, proceed as directed on page 83.)

Chart 64.

15 **Collins Bay** is situated at the northeast entrance to North Channel, the eastern entrance to Bay of Quinte, and $3\frac{3}{4}$ miles westward from Little Cataraqui Bay, the shore between being indented by several bays. One and a half miles westward of Carruthers Point (*see* page 80) is **Everett Point**, and lying 500 yards off it is a 7-foot patch. The entrance to Collins Bay is half a mile wide, 20 and runs in, northeasterly, 2 miles. There is a small wharf on the west entrance point with 12 feet of water alongside it. Collins Bay has a good depth throughout, and a sheltered anchorage in 4 fathoms of water. At its head is the village of Collins Bay, $7\frac{1}{2}$ miles distant from Kingston, by the Canadian National Railways.

Parrott Bay.—From the entrance to Collins Bay, the shore runs nearly 25 straight, in a general westerly direction, 3 miles, to **Parrott Point**, northwest of which a bay, called Parrott Bay, runs in three-quarters of a mile. This bay, with the exception of a spot on the southeast shore with 15 feet of water over it, has good water, but is open to the southwest.

Bath, with a population of 297 in 1941, and formerly a great wooden ship- 30 building place, is situated in a small bay $4\frac{1}{4}$ miles westward from Parrott Bay. This village has three small wharves. In 1922, the area in front of Wartman's dock was dredged to 10 feet. In 1926, the sandbar at the entrance to the creek just west of Bath was dredged to 10 feet and the same depth of water could be carried to the small wharf in the west side of the creek.

35 **Light.**—A private light is maintained at the eastern pier.

Millhaven Creek empties into North Channel 2 miles east of Bath. There is a Government wharf 128 feet long and 48 feet wide with a depth of 7 feet at the outer end.

From Bath, the main shore runs in the same direction, straight, 6 miles, to 40 the village of **Sandhurst**, half a mile northeast of which is **Downey's Wharf** at the entrance to that part of Bay of Quinte known as **Adolphus Reach**. Between the latter and Collins Bay, a distance of $13\frac{3}{4}$ miles, the mainland shore is fairly steep to.

Pleasant Point.—The northeast extremity of **Prince Edward County**, 45 formerly a peninsula until made an island by the present Murray Canal, is named Pleasant Point, which together with Sandhurst, define the northeast limit of Adolphus Reach. Pleasant Point is distant 2 miles from **Bluff Point**, the southwest extremity of Amherst Island, the channel between being known as **Upper Gap**.

Chart 64.

Light.—On the eastern extremity of Pleasant Point is erected a white octagonal tower, which from a height of 52 feet above the lake, exhibits a *fixed white light*, visible 14 miles.

Prinyer Cove is a well sheltered narrow bay, with 4 to 5 fathoms water in it, situated on the southeast side of Adolphus Reach, and $1\frac{3}{4}$ miles southwest of Pleasant Point. There is a wharf with 90 feet frontage and during the summer of 1932 an area 200 feet long and 100 feet wide in front of the wharf was dredged to $14\frac{1}{2}$ feet.

Amherst Island, lying between Kingston and Prince Edward County, is 10 miles in length northeast and southwest, its greatest breadth being $4\frac{1}{2}$ miles. The water on its northwest side is termed the **North Channel of Bay of Quinte**, with a least breadth of $1\frac{1}{2}$ miles, and depths varying from 9 to 39 fathoms.

Brother Islands, small, and three in number, lie between the entrance to Collins Bay and the northeast point of Amherst Island, to which they are connected by a narrow ridge above water, known as **Amherst Bar**. The middle one of the Brothers is known as Centre Brother, separated from the western islet by a narrow channel with depth of $4\frac{1}{2}$ fathoms.

Light.—On **Centre Brother** is erected a white square building which, at a height of 31 feet above the water, exhibits a *flashing white light*, visible 12 20 miles. This light is unwatched.

Buoy.—A black spar buoy is moored on the north edge of Kerr Point Shoal 4 cables west of the extreme of Kerr Point.

Kerr Point, on the northwest coast, and nearly midway between the northeast and southwest extremities of Amherst Island, projects half a mile in a northeast direction, with **Kerr Bay** on its southeast side, and **Kerr Point Shoal**, just awash, 200 yards from its northwest side.

Between Amherst Bar and Kerr Point, there are three other small bays, the middle one being known as **Stella Bay**, at the wharf in which the depth is about 12 feet. The coast of the island, for $1\frac{1}{4}$ miles northeast of Stella Bay, is bold. Here, however, a bank extends off half a mile, and continues to Centre Brother lighthouse.

Emerald is the name of a village on the same side of Amherst Island 3 miles southwest of Kerr Point, and $2\frac{1}{4}$ miles from the western extremity of the island. At its pier, there is a depth of about 11 feet. A danger named **Berdans Shoal**, extends 400 yards from the coast a little northeast of Emerald.

Ferry.—A ferry operates between Emerald, Bath, Stella, Millhaven and Kingston.

Salmon Island, quite small, lies with its north end bearing 107° , distant 2 miles from Centre Brother Island lighthouse. It occupies the northeast edge of a bank, that extends from it half a mile southeastward, while, to the northwest, it is joined to Amherst Bar. Vessels should not attempt to pass south, or west, of Salmon Island.

Nut Island.—From Amherst Bar, the southeast coast of Amherst Island trends, with a slight inward curve, with no landing places, southwesterly 7 miles to **Emeric Point**, the south extremity of the island. Three-quarters of a mile west of this point is Nut Island, the two enclosing a shallow bay running in one mile. About the middle of the southeast coast of Amherst Island, a bank, with 12 feet water on it, lies off, three-quarters of a mile, the rest of the coast being fairly clean.

Chart 64.

Big Bar Shoal, isolated, with 7 feet water on it, lies 205°, 3 miles from Emeric Point of Amherst Island, and 6½ miles 120° from Pleasant Point lighthouse.

5 Chart 77.

Simcoe Island, a little over 3½ miles in length northeast and southwest and a mile in greatest width, with scattered trees, and about 40 feet high, is situated at the northwest extremity of Wolfe Island, being separated therefrom, by a passage a quarter of a mile wide, called **Bateau Channel**, suitable only 10 for small craft, on account of the shoals stretching from the northeast end of Simcoe Island to Garden Island and Ferguson Point (*see* page 73).

Light.—Ninemile Point.—This name is given to the southwest extremity of Simcoe Island, on which is erected a white circular stone tower, exhibiting at a height of 45 feet above the water, a *group flashing white light*, of three flashes 15 every 25 seconds, visible in clear weather from a distance of 14 miles.

Fog signal.—In thick or foggy weather, a diaphone, operated by compressed air, gives one blast of 7 seconds duration, every minute.

From Ninemile Point, shoal water extends a quarter of a mile. From the northwest side of Simcoe Island, a mile from the lighthouse, a flat extends a 20 third of a mile, and, from the northern portion of the island, a bank extends half a mile, leaving a narrow channel, with depth of 14 feet, between it and Snake Island Bank.

Wharf.—Simcoe Island wharf, on the south side of the island, near the east end and facing Bateau Channel, has a face 70 feet in length. In 1935 the 25 area in front of the wharf extending to deep water and also for a distance of 100 feet east and west of the wharf, was dredged to a depth of 4 to 6 feet.

Snake Island, small, and with a few trees on it, lies upon the northwest edge of a bank two-thirds of a mile in diameter. The remains of the old pier on which Snake Island light stood are to be seen bearing 300°, distant 1,030 yards 30 from Fourmile Point. The island bears 308°, and is a mile distant from the same point.

Buoys.—Off the northwest extremity of **Snake Island Bank** is moored a black iron spar buoy. The southeast side of the same bank is marked by two red conical buoys.

35 **Middleground**, with 12 feet water over it, lies between Snake Island Bank and Melville Shoal.

Light-and-bell buoy.—On the west end of Middleground is moored a black cylindrical buoy, 69 T, showing a *flashing white* light bearing 358°, distant 1¼ miles from Ninemile Point light. The bell is rung by the motion of the buoy 40 on the waves.

Clearing mark.—Pigeon Island light in line with Ninemile Point light, bearing 356°, leads close west of Middleground.

Melville Shoal, with one foot of water over it, lies midway between Simcoe Island and the northeast extremity of Amherst Island. Under the depth of 18 45 feet, it extends 1½ miles northeast and southwest, its breadth being a third of a mile.

Buoy.—The east extreme of this shoal is marked by a red spar buoy, bearing 339°, distant 1¼ miles from Ninemile Point light.

Chart 77.

Portsmouth range lights in line, 18° lead between Melville Shoal and the Middleground (*see* page 86).

Horseshoe Island.—The southwest side of Wolfe Island (*see* page 72) has four prominent projections. Off the northwestern point, known as **Staley Point**, distant 400 yards, lies Horseshoe Island, half a mile in diameter, 10 feet high, and partly wooded, and, at the southwest entrance to Bateau Channel, before alluded to. Shoal water extends half a mile from the southwest point of Horseshoe Island.

Bells Point, low, with scattered trees, is one mile south of Horseshoe Island, 10 the bottom of **Grimshaw Bay**, between them, being shallow. Shoal water extends a third of a mile from Bells Point.

Long Point, its shape indicated by its name, projects southwestward $1\frac{2}{3}$ miles from the same side of Wolfe Island, having, between it and Bells Point, a capacious indentation named **Reed Bay**, running in nearly 3 miles, but shallow 15 in the bottom, as well as on its northwest and southeast sides. Long Point is low and sparsely wooded. A dangerous bank extends over three-quarters of a mile west from Long Point. At half a mile from the point, the depth is but 5 feet. A red spar buoy, privately maintained for the use of the Kingston and Cape Vincent ferry steamer, is placed at the end of the shoaler part of this 20 bank.

Bear Point (*see* page 75), the southwest extreme of Wolfe Island and the southeastern of the four projections above mentioned, encloses, together with Long Point, the broad, and fairly clean bight known as **Big Sandy Bay**, $1\frac{3}{4}$ miles wide, the eastern side of which is composed of sand hills, 20 to 30 feet high. 25 (For southeast coast of Wolfe Island, *see* page 74.)

Buoy.—A red spar buoy marks the southwest end of the shoal off Bear Point and is moored half a mile 205° from the extreme of the point.

Chart 64.

Pigeon Island.—**Light.**—This small island lies in Canadian waters, 30 nearly 4 miles southwestward of Long Point and 6 miles south of Ninemile Point light on Simcoe Island. On it, in addition to the white dwelling house, is erected a white skeleton tower, which at a height of 65 feet above the lake, exhibits a *group flashing white light of two flashes every 5 seconds*, visible in clear weather a distance of 15 miles. 35

Fog signal.—A hand horn answers signals from passing vessels.

Charity Shoal, with one foot water over it, is one of three dangerous reefs lying $3\frac{1}{2}$ miles southeastward of Pigeon Island; it is three-quarters of a mile long, northeast and southwest.

Buoy.—A black spar buoy is moored in 4 fathoms, on the northwest side of 40 Charity Shoal, bearing 125° distant 3 miles from Pigeon Island light.

South Charity Shoal, a small patch with 11 feet water on it, lies half a mile southward of the southwest extremity of Charity Shoal, and bears 134° , distant $3\frac{1}{2}$ miles from the same light.

East Charity Shoal, with 7 feet water on it, lies half a mile southeast of 45 Charity Shoal. It is about a third of a mile in length, and 230 yards in width.

Light.—A white tower, in 14 feet of water on the southeast side of East Charity Shoal, exhibits, at an elevation of 52 feet above the water, a *flashing white light every 4 seconds*.

Chart 64.

Bell-buoy.—A red bell-buoy is moored on the southern extreme of the shoal, 2½ cables south of the lighthouse.

Caution.—Vessels bound to and from the south channel of the St. Lawrence 5 River should keep well to the southeastward of East Charity Shoal light.

Abnormal magnetic variation exists near Charity Shoal.

Allan Otty Shoal, with 10 feet water over it, is a narrow reef, a half a mile long east and west, 2 miles 195° from Bear Point of Wolfe Island, and a little southeast of the line joining the latter to the lighthouse on East Charity Shoal. 10 It should be avoided in rough weather, even by light draught vessels.

Light-buoy.—A red light-buoy, showing a *flashing red light every 4 seconds*, is moored on the south side of the shoal.

United States chart 21.

Grenadier Island, 3½ miles southward of Tibbetts Point, is 2½ miles long, 15 northeast and southwest, by 1½ miles in breadth and thickly wooded. Shallow spits extend three-quarters of a mile from its southwest extremity, and nearly half a mile from its south side. In passing Grenadier Island, vessels should not shoal to less than 10 fathoms.

Fox Island lies two-thirds of a mile east of Grenadier Island. A depth of 10 20 feet can be carried through the channel between these islands, and both islands are joined to the bight eastward of them, by shoals. The north point of this bight is named **Baird Point**, and, between it and Tibbetts Point, distant 3 miles, there are three indentations, known as **Fuller**, **Wilson**, and **Mud Bays**. The latter and southern bay is shallow, narrow and runs in 1½ miles to **Mud Creek**.

25 The promontory north of Mud Bay is called **Stony Point**, off which a bank, with 6 feet least water, extends three-quarters of a mile.

Anchorage.—Between Stony Point and Grenadier Island, vessels will find good anchorage in 7 to 8 fathoms, with protection from all but westerly winds.

Point Peninsula, 6 miles long and about 60 feet high, is connected at 30 its northwest extremity, to the mainland of New York State, by a narrow short isthmus. The southwest extremity of Point Peninsula is distant 6¼ miles southeast of Grenadier Island, and, the shore of the bay formed between them has shoal water extending from it three-quarters of a mile.

35 A bank makes off half a mile from the southwest extremity of Point Peninsula. Several wrecks have occurred on this reef and it should be given a wide berth. The water is deep along the southeast coast of Point Peninsula.

An isolated spot with 14 feet of water on it lies three-quarters of a mile, 225°, from the southwest extremity of Point Peninsula.

Chaumont Bay.—Between the middle of the southeast coast of Point 40 Peninsula and Pillar Point (*see* page 89), is the entrance, three-quarters of a mile wide, leading to a capacious basin, the northern part of which is known as Chaumont Bay. The latter is well protected, and, has good anchorage in 3½ to 4½ fathoms over mud bottom, in the middle and western portion. The shallow and narrow northern arm of this basin takes the name of **Three Mile Bay**, at 45 the head of which is the village of the same name, and a pier, to which 2 feet water can be carried.

United States chart 21.

Point Salubrious, formerly **Vesuvius**, 45 feet high, divides Chaumont and **Guffin Bays**; **Guffin Creek** flows into the head of the latter, and shallow water extends from its mouth half a mile. With this exception, the bay has a depth of $4\frac{1}{2}$ to 5 fathoms over a mud bottom, and good shelter, but there is no landing pier.

Chaumont Village, is situated at the northeastern extremity of Chaumont Bay, at the head of a bight running in northward of Point Salubrious. **Chaumont River** flows into the bay near Chaumont Village which possesses stone quarries, large quantities of stone being shipped by sea and by railway. The 10 piers will accommodate vessels drawing 7 feet. The village is connected to Cape Vincent by a branch of the New York Central and Hudson River Railway.

Point Salubrious is steep to, but, from the north shore, between Chaumont Village and Three Mile Bay, shallow flats extend out to the middle of the bay.

Johnson Shoal, awash, is marked by a black can buoy located $1\frac{1}{8}$ miles southwestward of the light on Independence Point.

Light.—A white skeleton tower, erected on **Independence Point**, at Chaumont Harbour, exhibits at 30 feet above water, a *fixed green* light, visible 12 miles in clear weather. The light is unwatched.

Cherry Island, a mile long, northeast and southwest, but narrow, lies half a mile southwest of Point Salubrious, and, between them, is a good passage. The coast of the island is clean.

Light.—On the southwest point of Cherry Island is erected a white square tower exhibiting, at 32 feet above water, a *flashing white* light, *every 3 seconds*, visible 10 miles in clear weather. This light is unwatched. 25

Pillar Point, before mentioned, 60 feet high, is $5\frac{1}{4}$ miles from the head of Guffin Bay, the shore between them being steep to. A bank, with depths under 3 fathoms, makes off from Pillar Point a third of a mile.

Bull Rock Point, the north entrance point of Black River Bay, is $1\frac{3}{4}$ miles southeast of Pillar Point, the bay between them being shallow. From Bull Rock 30 Point a bank extends a third of a mile.

Black River Bay.—Bull Rock Point and Horse Island, a little more than a mile southeast of it, form the entrance points to Black River Bay, running northeastward $5\frac{1}{2}$ miles to the entrance of Black River, the shores converging slightly as far as **Storrs Point**, on the southeast side of the bay. The bay has good water for $3\frac{3}{4}$ miles, or nearly to Storrs Point, beyond which it expands and is filled with shallow flats. The Village of **Dexter** is situated a mile above the mouth of the river, on the bar of which there is a depth of only 4 feet.

Submarine cable.—The Sackets Harbour—Galloo Island submarine telephone cable runs westward from the mouth of the Black River passing 40 north of Stony Island and terminating at the Galloo Island coast guard station.

Sackets Harbour is situated on the south side of Black River Bay, and a mile eastward from Horse Island. It is sheltered from the north by **Navy Point**, a spit of loose rock and gravel, from the outer end of which a shoal, with 2 feet water on it, extends 400 feet in a southwesterly direction. On this shoal a stone dyke extends 180 feet from the point. The entrance to the harbour between the extremity of this shoal, and the railway wharf, on the south side, is 200 feet wide, with 12 feet water. The harbour has an area of nearly seven acres, and depths ranging from 7 to 11 feet.

United States chart 21.

The rails of the New York Central and Hudson River Railway are laid on to the wharf.

Horse Island.—As before stated, this island forms the southern entrance point of Black River Bay, and is separated from the southeast shore by a narrow shallow channel. Shoal water extends half a mile southwest from Horse Island.

Light.—On Horse Island, from a white square tower attached to a dwelling, is exhibited, at a height of 57 feet above the water, a *group flashing white* light of *two flashes every 10 seconds*, visible 14 miles. It is known as **Sackets** 10 **Harbour light**. The light is unwatched.

Henderson Bay is a large, and, in the southwest portion, well sheltered indentation between Horse Island and Stony Point, $7\frac{1}{4}$ miles long, with depths of 5 to 7 fathoms, the land a little way back rising to a height of 180 feet.

Bass and Gull Islands, small and connected by shoal water, are three-quarters of a mile apart, and lie, respectively, 1.6 and 2.6 miles southwesterly from Sackets Harbour lighthouse. Shoal water extends a quarter of a mile northeast of Bass Island, and a third of a mile southwest of Gull Island. The principal entrance channel to Henderson Bay is between Bass and Horse Islands and, between the shoal water on either side, is three-quarters of a mile wide.

20 **Henderson Harbour.**—From Horse Island, the shore of the bay trends southward $2\frac{1}{2}$ miles to **Campbell Point**, close south of **Bedford Creek**, and, from this portion of the bay, shoal water extends from half to three-quarters of a mile. From Campbell Point, the shore runs southwest 5 miles to Henderson Harbour, an indentation a mile in length. The village of the same name stands 25 upon the east point of the harbour. There is a depth of 4 to 9 feet at the wharves.

Six Town Point.—From Henderson Harbour, the shore of the bay trends northwest $1\frac{1}{2}$ miles, and, then, northeast, $1\frac{3}{4}$ miles to a small peninsula, the indentation thus formed being known as **Whites Bay**. This peninsula is connected to the shore by a narrow isthmus forming a shallow cove called **Snowshoe** 30 **Bay**. Six Town Point is the northeast extremity of a string of narrow islands a mile in length, separated from the above-mentioned peninsula by a shallow channel.

Lime Barrel Shoal, awash, extends a mile northeastward from Six Town Point, leaving a narrow channel between it and Gull Island. From this same 35 point, a narrow bank extends half a mile northwest, and then runs for a mile southwest, leaving deeper water southeast of it.

Light-buoy.—A black buoy showing a *flashing white* light *every 4 seconds*, moored $3\frac{1}{4}$ miles, 231° , from Sackets Harbour lighthouse, marks an entrance for pleasure craft into Henderson Bay, across the shoal northeast of Six Town 40 Point.

Stony Point.—From Snowshoe Bay, the bold outer coast changes its direction gradually from west to south, the distance to Stony Point being about 5 miles, the land, a mile back, rising to a height of 60 feet.

Light.—On the southwest extreme of Stony Point is erected a white square 45 tower attached to a dwelling, which, from a height of 57 feet, exhibits an *alternating white and red* light *every 10 seconds*, thus: *white flash one second, eclipse 4 seconds; red flash one second, eclipse 4 seconds*, and visible 15 miles.

United States chart 21.

Stony Island lies 2 miles from the land a little north of Stony Point, the channel between being free from dangers. The island is 4 miles long northeast and southwest, the latter, a narrow point, from which shoal water extends a third of a mile. The island is almost divided by a lake, and near the northeast end 5 and on the northwest side of the island, is a semicircular indentation named **Dutch John Bay**, affording snug anchorage in 5 to 7 fathoms, and protection from south and east gales. From the southeast point of the island, a bank extends a third of a mile.

Light-buoy.—Moored in 6 fathoms of water, about a third of a mile off the 10 northern end of the island, is a red conical light-buoy, 2, exhibiting a *flashing white* light every 4 seconds.

Calf Island, half a mile long, lies a third of a mile from the southwest extreme of Stony Island, being joined thereto by shoal water.

Calf Island Spit, with 7 feet water on it, is a dangerous shoal extending in a 15 southwesterly direction a mile from Calf Island.

Buoy.—The outer end of this spit is marked by a black can buoy moored in 18 feet water, bearing 295°, distant 4.7 miles from Stony Point light.

A small rock shoal, with a least depth of 12 feet, lies 2½ miles southwestward of Calf Island; it is nearly on the sailing course between Rochester and Sackets 20 Harbour.

Little Galloo Island, lying nearly in the middle of the passage between Calf and Galloo Islands, is a third of a mile long, and, from its northeast point a shoal, containing an islet, extends 400 yards. South and southwestward from Little Galloo Island, a shallow bank extends a third of a mile. 25

Galloo Island, in United States waters, is 4½ miles in length northeast and southwest, and a mile in breadth.

Light.—On the southwest extremity of Galloo Island is erected a grey conical tower, from which is shown, at a height of 58 feet, above the lake, a *group flashing white* light of *three* flashes every 12 seconds, and visible 15 30 miles.

Fog signal.—In foggy, or thick weather, a steam whistle sounds *three* blasts at intervals of 30 seconds.

A shoal extends half a mile southwestward from the lighthouse, and the northeast portion of the island has shallow water extending from it a third of a 35 mile. There is no harbour on the island and landings must be made from small boats.

North Pond is the name given to a shallow indentation on the north side of Galloo Island, a little more than a mile west of its northeast extremity. Half a mile northward of North Pond is an isolated shoal with 6 feet water on it. 40

Gill Harbour, sheltered by a reef, on the opposite side of the island, a short distance from the northeast extreme, is fit only for very small craft. The water close to the middle portion of the island is good.

A coast guard life-boat station is located in Gill Harbour with telephone connection with Sackets Harbour. 45

Galloo Shoal is an ugly danger with 2 feet of water on it, 600 yards long and 300 yards wide, lying a mile northwest of the southwest point of Galloo Island, with deep water between them.

United States chart 21.

Light-buoy.—The southwest end of Galloo Shoal is marked by a black conical light-buoy, No. 3, showing a *flashing white* light, *every 4 seconds*, and bearing 285° distant 1.3 miles from Galloo Island lighthouse. Vessels should pass 5 westward of this buoy.

Chart 64.

Main Duck Island, in Canadian waters, lies about 8 miles westward from Galloo Island, and midway between Galloo and False Ducks Islands. Its length northwest and southeast is 2 miles, and its greatest breadth at the north-10 west end is two-thirds of a mile. On the northeast side of the island is a small village occupied during the summer by a few families of fishermen whose average annual catch amounts to about 200 tons. There is a small private wharf, the channel to which has been dredged 50 feet wide and 7 feet deep.

Light.—On the west end of the island is erected a white, octagonal con-15 crete tower which, at a height of 74 feet above the lake, exhibits a *flashing white* light *every 6 seconds*, visible 16 miles.

Fog signal.—In thick or foggy weather a diaphone sounds *two blasts every 45 seconds*.

Radio beacon.—An automatic radio beacon is located on Main Duck20 Island.

Yorkshire Island, also in Canadian waters, half a mile long, lies a quarter of a mile from the east extremity of Main Duck Island, being connected thereto by shoal water. The north coasts of both islands are fairly steep to, but, from the south sides, shoals under the depth of 14 feet extend half a mile. On this25 shoal a **spot** with 16 feet of water over it lies one mile 243° from Main Duck Island light. A **spot** with 19 feet of water lies 1½ miles, 243° from the same light.

Between these two islands and Galloo Shoal, the passage, 6 miles broad, has depths varying from 6 to 30 fathoms.

False Ducks Islands are two in number, the eastern being known as30 **Swetman Island** and the western as **Timber Island**. The former is pear-shaped, two-thirds of a mile long east and west by a quarter of a mile in greatest width near the eastern end, which is 8 miles, 278° from the western extremity of Main Duck Island.

Light.—On the east point of Swetman Island is erected a white circular35 stone tower, which, at a height of 68 feet above the lake, exhibits a *fixed white* light, visible in clear weather, 15 miles. The light bears 76°, distant 3.1 miles from South Bay light of Prince Edward County.

Fog signal.—In thick or foggy weather, a diaphone sounds one blast of *four seconds* duration *every minute*.

False Ducks Bank.—The north and east sides of Swetman Island are steep40 to, but from the southwest side a bank, with **Duckling Reef**, just awash, extends almost to Prince Edward Point. Only small vessels should attempt to pass between False Ducks Islands and Prince Edward Point light. The southeast edge of False Ducks Bank runs 2 miles 218° from False Ducks Islands lighthouse.

Traverse Shoal or False Ducks Outer Shoal, a third of a mile in diameter45 has a depth of 7 feet on it, and lies 159°, distant 1½ miles from Prince Edward Point light. The southeast edge of the shoal also bears 224°, nearly 3½ miles from False Ducks Islands lighthouse.

Chart 64.

William Shoal, with 12 feet water on it, lies 146° , distant 1.3 miles from the same. A patch, with 18 feet on it, lies a quarter of a mile southwest of William Shoal.

Buoy.—A red spar buoy is moored near the west end of William Shoal. 5

Harris Shoal, with 15 feet water over it, lies 3.1 miles, 112° from the same light.

Psyche Shoal, with 19 feet of water on it lies 4 miles 263° from Main Duck Island light. The shoal, under five fathoms, extends half a mile in a north-easterly and southwesterly direction, and is nearly 2 cables wide. 10

Light-and-bell buoy.—On the southeast side of Psyche Shoal is moored, in $6\frac{1}{2}$ fathoms of water, a red light-and-bell buoy, showing a *flashing red* light with a bell rung by the motion of the buoy on the waves.

Timber Island, three-quarters of a mile northeast and southwest and a quarter of a mile broad, lies one mile northeast of the northern part of Prince Edward Point, being almost joined thereto, by shoals. The water is deep on all but the southwest side of Timber Island. 15

Anchorage is afforded in 6 to 9 fathoms of water between Timber and Swetman Islands.

Prince Edward Point.—Prince Edward County, transformed into an island by the construction of the Murray Canal, is 37 miles long from Prince Edward Point to the canal, the inlet on its north coast being known as **Bay of Quinte**. The point, under description, takes its name from the large bight between it and Point Pleasant (*see* page 84) known as **Prince Edward Bay**. There is a passage with $1\frac{3}{4}$ fathoms least water between the point and Timber Island, used by light draught vessels. A bank extends over half a mile south-ward of the point, in the direction of Traverse Shoal, but from which it is separated by slightly deeper water. 25

Light.—A white square tower, with dwelling attached, is erected on Prince Edward Point, and, at a height of 36 feet above the lake, exhibits a *flashing green* light, visible in clear weather from a distance of 8 miles. 30

In the small cove just west of the lighthouse is a dredged channel opening into a small basin; in 1934 these were dredged to a depth of $4\frac{1}{2}$ feet.

From the inner part of Prince Edward Bay a small cove, South Bay, extends to the south. On the west side of this bay at Port Milford, an approach channel and basin in front of the wharves were dredged in 1926 to a depth of 10 feet. 35

On the north side of Prince Edward Bay, at the Village of Waupoos, a channel of approach and basin in front of the wharves were dredged in 1926 to a depth of 8 feet.

Storm signals are shown at Port Milford.

40

United States chart 21.

Directions, Lake Ontario to Alexandria Bay.—From a position with Galloo Island light bearing 90° , distant $3\frac{1}{2}$ miles, the course and distance to a position with Tibbetts Point light on the same bearing, distant $1\frac{3}{4}$ miles, is 21° for 16 miles, leading $1\frac{3}{4}$ miles northwest of Galloo Shoal black light-buoy, 3, 45 moored 2 miles southeast of East Charity Shoal light and over a mile east of Allan Otty Shoal.

From the position west of Tibbetts Point, a vessel will steer to pass a quarter of a mile northwest of Cape Vincent breakwater (*see* page 75), and thence haul northward to pass 500 yards west of Feather Bed Shoal black light-buoy, and

Charts 58, 77.

midway between the coast of Carleton Island and Hineckley Spit Shoal red spar buoy steering 14° on Irvine Point leading lights (*see page 75*).

(For remarks on passage south of Carleton Island, *see page 74*).

- 5 Pass 500 yards from Carleton Island, and, when past it, steer 79° to pass 500 yards northwest of Linda Island light, keeping nearer the Wolfe Island coast to avoid the 10-foot patch lying three-quarters of a mile above Linda Island. Thence Bartlett Point light should be steered for, distant $5\frac{1}{2}$ miles from Linda Island, and, if not stopping at Clayton, proceed as directed on page 82.
- 10 **Alexandria Bay to Lake Ontario.**—Proceed to Bartlett Point light, as directed on page 81, whence steer to pass 500 yards north of Linda Island light, and thence in mid-channel, there being no shoals excepting the Blanket Shoals northward of the track, and the 10-foot patch west of Linda Island. Pass 500 yards from Carleton Island, and steer 194° with Irvine Point leading lights
- 15 astern, for Cape Vincent breakwater lights, passing a third of a mile southeast of Hineckley Spit Shoal red light-buoy (*see page 75*), and 500 yards northwest of Feather Bed Shoal black light-buoy. (For remarks on passage south of Carleton Island, *see page 74*).

- Pass a quarter of a mile north of the breakwater and then in mid-channel
- 20 234° , for 4 miles until Tibbetts Point light bears 90° , distant $1\frac{3}{4}$ miles. Thence the course if bound to Oswego, is 201° for $15\frac{1}{2}$ miles, when Galloo Island light should bear 90° , distant $3\frac{1}{2}$ miles. Haul southward, now, and steer 180° for Oswego, distant 28 miles.

- If bound to the western part of Lake Ontario, a vessel in daylight with fine
- 25 and clear weather may, from the position west of Tibbetts Point, steer 234° , for $24\frac{1}{2}$ miles, when False Ducks light should bear 360° , distant 4 miles (*see page 95*). This track leads a quarter of a mile northwest of Allan Otty Shoal, and a third of a mile on the same side of Charity Shoal, and over a spot with $3\frac{3}{4}$ fathoms on it lying 5 miles 23° from Main Duck light.

- 30 Or, an alternative track, leading south of the Charity Shoals and northwest of Main Duck Island, may be taken. From the above position west of Tibbetts Point light steer 216° with East Charity Shoal light on the starboard bow, for 6 miles, when that buoy should bear 315° , distant 4 cables. This course leads 400 yards southeast of Allan Otty Shoal. From the position
- 35 abreast the light steer 237° for 12 miles, when Main Duck Island light should bear 90° , distant 1.84 miles, having passed one mile northwest of the island.

- Lake Ontario to Kingston.**—A vessel from Oswego will pass $1\frac{1}{2}$ miles east of Yorkshire Island (Main Duck) steering 356° with Pigeon Island light on the starboard bow, distant $9\frac{1}{4}$ miles. Pass seven-eighths of a mile west of Pigeon
- 40 Island and continue the same course, 356° , with Ninemile Point light on the starboard bow. After running $5\frac{3}{4}$ miles, a vessel should be on the Portsmouth range and abreast of Ninemile Point light, distant three-quarters of a mile.

- The range leads 18° , between Melville Shoal and Middleground buoys, into the North Channel and should be kept on till within half a mile from Carruthers
- 45 Point.

- Being, now, well north of Snake Island Bank, a vessel should turn eastward, passing northward of Penitentiary Shoal red and black light-buoy, 61 T, giving the shore a berth until Barrielfield common range lights are in line, 37° , on which marks proceed into Kingston Harbour, with $17\frac{1}{2}$ feet water. To those well
- 50 acquainted, there is a channel with depth of 13 feet, southeast of Snake Island bank.

Charts 58, 77.

To Kingston from the western part of the lake, a vessel from a position with False Ducks light bearing 360° , distant 4 miles, the distance and course to a position on the Portsmouth range with Ninemile Point light bearing 90° , distant three-quarters of a mile, is 21 miles, 32° , whence, proceed as before directed. 5

On the above course, a vessel will pass over the bank southeast of Swetman Island, and between William and Harris Shoals, with 12 and 15 feet water over them, respectively.

Or, if from the position 1.84 miles west of Main Duck Island light, steer 18° , to a position on the Portsmouth range, and proceed as before directed. 10

If bound for Tibbetts Point, from position off Main Duck Island light, steer 57° , for $11\frac{1}{2}$ miles with East Charity shoal light on the port bow. Rounding the latter at a distance of half a mile, steer 36° , for $6\frac{2}{3}$ miles to the position off Tibbetts Point and proceed down the river as heretofore directed. This track leads 400 yards southeast of Allan Otty Shoal. 15

Kingston to Lake Ontario.—Proceed out, 217° , on the line of Barriefield common leading lights in one, passing northward of Penitentiary Shoal red and black light-buoy, 61 T, and giving the coast a berth, until the Portsmouth leading lights are in one astern 18° . The range is kept in one passing between Melville Shoal and Middleground buoys till abreast of Ninemile Point lighthouse. 20

From this point continue on 198° for 16 miles to the position before mentioned, 1.84 miles westward of Main Duck Island light, from which point proceed as desired.

The course and distance from this point to Charlotte, New York, is 226° , 63 miles; to Niagara Bar, 251° , 129 miles, the latter course leading only one mile southward of **Peter Point Reef**. 25

If proceeding from Kingston to Oswego: a vessel may, when abreast Ninemile Point light, steer 176° with Pigeon Island light on the port bow. Pass three-quarters of a mile west of the latter, $1\frac{1}{2}$ miles east of Yorkshire Island (Main Duck), and continue this course to Oswego, distant from the latter, $32\frac{1}{2}$ miles. 30

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NOTE.—Names in brackets indicate either the general locality or neighbouring prominent feature or the alternative geographical name.

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